



8

SEQUENCE LISTING

8

<110> Ole THASTRUP
Sara BJRON
Soren TULLIN
Kasper ALMHOLT
Kurt SCUDDER

<120> A Method For Extracting Quantitative Information Relating To An
Influence On A Cellular Response

<130> 3759-0120P

<140> 10/072,036
<141> 2002-02-05

<150> 09/417,197

<151> 1999-10-07

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<170> PatentIn version 3.0

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| Met | Val | Ser | Lys | Gly | Glu | Glu | Leu | Phe | Thr | Gly | Val | Val | Pro | Ile | Leu | |
| 1 | | | 5 | | | | | 10 | | | | | 15 | | | |
| gtc | gag | ctg | gac | ggc | gac | gta | aac | ggc | cac | aag | ttc | agc | gtg | tcc | ggc | 96 |
| Val | Glu | Leu | Asp | Gly | Asp | Val | Asn | Gly | His | Lys | Phe | Ser | Val | Ser | Gly | |
| | | | 20 | | | | | 25 | | | | | 30 | | | |
| gag | ggc | gag | ggc | gat | gcc | acc | tac | ggc | aag | ctg | acc | ctg | aag | ttc | atc | 144 |
| Glu | Gly | Glu | Gly | Asp | Ala | Thr | Tyr | Gly | Lys | Leu | Thr | Leu | Lys | Phe | Ile | |
| | | | 35 | | | | 40 | | | | | 45 | | | | |
| tgc | acc | acc | ggc | aag | ctg | ccc | gtg | ccc | tgg | ccc | acc | ctc | gtg | acc | acc | 192 |
| Cys | Thr | Thr | Gly | Lys | Leu | Pro | Val | Pro | Trp | Pro | Thr | Leu | Val | Thr | Thr | |
| | | | 50 | | | | 55 | | | | 60 | | | | | |
| ctg | acc | tac | ggc | gtg | cag | tgc | ttc | agc | cgc | tac | ccc | gac | cac | atg | aag | 240 |
| Leu | Thr | Tyr | Gly | Val | Gln | Cys | Phe | Ser | Arg | Tyr | Pro | Asp | His | Met | Lys | |
| | | | | | 70 | | | | 75 | | | | | 80 | | |
| cag | cac | gac | ttc | ttc | aag | tcc | gcc | atg | ccc | gaa | ggc | tac | gtc | cag | gag | 288 |
| Gln | His | Asp | Phe | Phe | Lys | Ser | Ala | Met | Pro | Glu | Gly | Tyr | Val | Gln | Glu | |
| | | | 85 | | | | | 90 | | | | | | 95 | | |
| cgc | acc | atc | ttc | ttc | aag | gac | gac | ggc | aac | tac | aag | acc | cgc | gcc | gag | 336 |
| Arg | Thr | Ile | Phe | Phe | Lys | Asp | Asp | Gly | Asn | Tyr | Lys | Thr | Arg | Ala | Glu | |
| | | | 100 | | | | | 105 | | | | | 110 | | | |
| gtg | aag | ttc | gag | ggc | gac | acc | ctg | gtg | aac | cgc | atc | gag | ctg | aag | ggc | 384 |
| Val | Lys | Phe | Glu | Gly | Asp | Thr | Leu | Val | Asn | Arg | Ile | Glu | Leu | Lys | Gly | |
| | | | 115 | | | | 120 | | | | | 125 | | | | |
| atc | gac | ttc | aag | gag | gac | ggc | aac | atc | ctg | ggg | cac | aag | ctg | gag | tac | 432 |
| Ile | Asp | Phe | Lys | Glu | Asp | Gly | Asn | Ile | Leu | Gly | His | Lys | Leu | Glu | Tyr | |

| | | | |
|---|-----|-----|------|
| 130 | 135 | 140 | |
| aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac | | | 480 |
| Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn | | | |
| 145 | 150 | 155 | 160 |
| ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc | | | 528 |
| Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser | | | |
| 165 | 170 | 175 | |
| gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc | | | 576 |
| Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly | | | |
| 180 | 185 | 190 | |
| ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg | | | 624 |
| Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu | | | |
| 195 | 200 | 205 | |
| agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc | | | 672 |
| Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe | | | |
| 210 | 215 | 220 | |
| gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc | | | 720 |
| Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser | | | |
| 225 | 230 | 235 | 240 |
| gga ctc aga tct cga gct caa gct tcg aat tca acc atg gcg gcg gcg | | | 768 |
| Gly Leu Arg Ser Arg Ala Gln Ala Ser Asn Ser Thr Met Ala Ala Ala | | | |
| 245 | 250 | 255 | |
| gcg gct cag ggg ggc ggg ggc ggg gag ccc cgt aga acc gag ggg gtc | | | 816 |
| Ala Ala Gln Gly Gly Gly Gly Gly Glu Pro Arg Arg Thr Glu Gly Val | | | |
| 260 | 265 | 270 | |
| ggc ccg ggg gtc ccg ggg gag gtg gag atg gtg aag ggg cag ccg ttc | | | 864 |
| Gly Pro Gly Val Pro Gly Glu Val Glu Met Val Lys Gly Gln Pro Phe | | | |
| 275 | 280 | 285 | |
| gac gtg ggc ccg cgc tac acg cag ttg cag tac atc ggc gag ggc gcg | | | 912 |
| Asp Val Gly Pro Arg Tyr Thr Gln Leu Gln Tyr Ile Gly Glu Gly Ala | | | |
| 290 | 295 | 300 | |
| tac ggc atg gtc agc tcg gcc tat gac cac gtg cgc aag act cgc gtg | | | 960 |
| Tyr Gly Met Val Ser Ser Ala Tyr Asp His Val Arg Lys Thr Arg Val | | | |
| 305 | 310 | 315 | 320 |
| gcc atc aag aag atc agc ccc ttc gaa cat cag acc tac tgc cag cgc | | | 1008 |
| Ala Ile Lys Lys Ile Ser Pro Phe Glu His Gln Thr Tyr Cys Gln Arg | | | |
| 325 | 330 | 335 | |
| acg ctc cgg gag atc cag atc ctg ctg cgc ttc cgc cat gag aat gtc | | | 1056 |
| Thr Leu Arg Glu Ile Gln Ile Leu Arg Phe Arg His Glu Asn Val | | | |
| 340 | 345 | 350 | |
| atc ggc atc cga gac att ctg cgg gcg tcc acc ctg gaa gcc atg aga | | | 1104 |
| Ile Gly Ile Arg Asp Ile Leu Arg Ala Ser Thr Leu Glu Ala Met Arg | | | |
| 355 | 360 | 365 | |
| gat gtc tac att gtg cag gac ctg atg gag act gac ctg tac aag ttg | | | 1152 |
| Asp Val Tyr Ile Val Gln Asp Leu Met Glu Thr Asp Leu Tyr Lys Leu | | | |
| 370 | 375 | 380 | |
| ctg aaa agc cag cag ctg agc aat gac cat atc tgc tac ttc ctc tac | | | 1200 |
| Leu Lys Ser Gln Gln Leu Ser Asn Asp His Ile Cys Tyr Phe Leu Tyr | | | |
| 385 | 390 | 395 | 400 |
| cag atc ctg cgg ggc ctc aag tac atc cac tcc gcc aac gtg ctc cac | | | 1248 |
| Gln Ile Leu Arg Gly Leu Lys Tyr Ile His Ser Ala Asn Val Leu His | | | |
| 405 | 410 | 415 | |
| cga gat cta aag ccc tcc aac ctg ctc agc aac acc acc tgc gac ctt | | | 1296 |
| Arg Asp Leu Lys Pro Ser Asn Leu Leu Ser Asn Thr Thr Cys Asp Leu | | | |
| 420 | 425 | 430 | |
| aag att tgt gat ttc ggc ctg gcc cgg att gcc gat cct gag cat gac | | | 1344 |
| Lys Ile Cys Asp Phe Gly Leu Ala Arg Ile Ala Asp Pro Glu His Asp | | | |
| 435 | 440 | 445 | |
| cac acc ggc ttc ctg acg gag tat gtg gct acg cgc tgg tac cgg gcc | | | 1392 |
| His Thr Gly Phe Leu Thr Glu Tyr Val Ala Thr Arg Trp Tyr Arg Ala | | | |
| 450 | 455 | 460 | |
| cca gag atc atg ctg aac tcc aag ggc tat acc aag tcc atc gac atc | | | 1440 |
| Pro Glu Ile Met Leu Asn Ser Lys Gly Tyr Thr Lys Ser Ile Asp Ile | | | |

| | | | | | | | |
|---|-----|-----|-----|-----|-----|-----|------|
| 465 | | 470 | | 475 | | 480 | |
| tgg tct gtg ggc tgc att ctg gct gag atg ctc tct aac cgg ccc atc | | | | | | | 1488 |
| Trp Ser Val Gly Cys Ile Leu Ala Glu Met Leu Ser Asn Arg Pro Ile | | | | | | | |
| | 485 | | 490 | | 495 | | |
| ttc cct ggc aag cac tac ctg gat cag ctc aac cac att ctg ggc atc | | | | | | | 1536 |
| Phe Pro Gly Lys His Tyr Leu Asp Gln Leu Asn His Ile Leu Gly Ile | | | | | | | |
| | 500 | | 505 | | 510 | | |
| ctg ggc tcc cca tcc cag gag gac ctg aat tgt atc atc aac atg aag | | | | | | | 1584 |
| Leu Gly Ser Pro Ser Gln Glu Asp Leu Asn Cys Ile Ile Asn Met Lys | | | | | | | |
| | 515 | | 520 | | 525 | | |
| gcc cga aac tac cta cag tct ctg ccc tcc aag acc aag gtg gct tgg | | | | | | | 1632 |
| Ala Arg Asn Tyr Leu Gln Ser Leu Pro Ser Lys Thr Lys Val Ala Trp | | | | | | | |
| | 530 | | 535 | | 540 | | |
| gcc aag ctt ttc ccc aag tca gac tcc aaa gcc ctt gac ctg ctg gac | | | | | | | 1680 |
| Ala Lys Leu Phe Pro Lys Ser Asp Ser Lys Ala Leu Asp Leu Leu Asp | | | | | | | |
| | 545 | | 550 | | 555 | | 560 |
| cgg atg tta acc ttt aac ccc aat aaa cgg atc aca gtg gag gaa gcg | | | | | | | 1728 |
| Arg Met Leu Thr Phe Asn Pro Asn Lys Arg Ile Thr Val Glu Glu Ala | | | | | | | |
| | 565 | | 570 | | 575 | | |
| ctg gct cac ccc tac ctg gag cag tac tat gac ccg acg gat gag cca | | | | | | | 1776 |
| Leu Ala His Pro Tyr Leu Glu Gln Tyr Tyr Asp Pro Thr Asp Glu Pro | | | | | | | |
| | 580 | | 585 | | 590 | | |
| gtg gcc gag gag ccc ttc acc ttc gcc atg gag ctg gat gac cta cct | | | | | | | 1824 |
| Val Ala Glu Glu Pro Phe Thr Phe Ala Met Glu Leu Asp Asp Leu Pro | | | | | | | |
| | 595 | | 600 | | 605 | | |
| aag gag cgg ctg aag gag ctc atc ttc cag gag aca gca cgc ttc cag | | | | | | | 1872 |
| Lys Glu Arg Leu Lys Glu Leu Ile Phe Gln Glu Thr Ala Arg Phe Gln | | | | | | | |
| | 610 | | 615 | | 620 | | |
| ccc gga gtg ctg gag gcc ccc tag | | | | | | | 1896 |
| Pro Gly Val Leu Glu Ala Pro | | | | | | | |
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| 20 25 30 | |
| Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile | |
| 35 40 45 | |
| Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr | |
| 50 55 60 | |
| Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys | |
| 65 70 75 80 | |
| Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu | |
| 85 90 95 | |
| Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu | |
| 100 105 110 | |

Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
115 120 125
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
130 135 140
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145 150 155 160
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
165 170 175
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
180 185 190
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
195 200 205
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
210 215 220
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225 230 235 240
Gly Leu Arg Ser Arg Ala Gln Ala Ser Asn Ser Thr Met Ala Ala Ala
245 250 255
Ala Ala Gln Gly Gly Gly Gly Gly Glu Pro Arg Arg Thr Glu Gly Val
260 265 270
Gly Pro Gly Val Pro Gly Glu Val Glu Met Val Lys Gly Gln Pro Phe
275 280 285
Asp Val Gly Pro Arg Tyr Thr Gln Leu Gln Tyr Ile Gly Glu Gly Ala
290 295 300
Tyr Gly Met Val Ser Ser Ala Tyr Asp His Val Arg Lys Thr Arg Val
305 310 315 320
Ala Ile Lys Lys Ile Ser Pro Phe Glu His Gln Thr Tyr Cys Gln Arg
325 330 335
Thr Leu Arg Glu Ile Gln Ile Leu Leu Arg Phe Arg His Glu Asn Val
340 345 350
Ile Gly Ile Arg Asp Ile Leu Arg Ala Ser Thr Leu Glu Ala Met Arg
355 360 365
Asp Val Tyr Ile Val Gln Asp Leu Met Glu Thr Asp Leu Tyr Lys Leu
370 375 380
Leu Lys Ser Gln Gln Leu Ser Asn Asp His Ile Cys Tyr Phe Leu Tyr
385 390 395 400
Gln Ile Leu Arg Gly Leu Lys Tyr Ile His Ser Ala Asn Val Leu His
405 410 415
Arg Asp Leu Lys Pro Ser Asn Leu Leu Ser Asn Thr Thr Cys Asp Leu
420 425 430
Lys Ile Cys Asp Phe Gly Leu Ala Arg Ile Ala Asp Pro Glu His Asp
435 440 445
His Thr Gly Phe Leu Thr Glu Tyr Val Ala Thr Arg Trp Tyr Arg Ala
450 455 460
Pro Glu Ile Met Leu Asn Ser Lys Gly Tyr Thr Lys Ser Ile Asp Ile
465 470 475 480
Trp Ser Val Gly Cys Ile Leu Ala Glu Met Leu Ser Asn Arg Pro Ile
485 490 495
Phe Pro Gly Lys His Tyr Leu Asp Gln Leu Asn His Ile Leu Gly Ile
500 505 510
Leu Gly Ser Pro Ser Gln Glu Asp Leu Asn Cys Ile Ile Asn Met Lys
515 520 525
Ala Arg Asn Tyr Leu Gln Ser Leu Pro Ser Lys Thr Lys Val Ala Trp
530 535 540
Ala Lys Leu Phe Pro Lys Ser Asp Ser Lys Ala Leu Asp Leu Leu Asp
545 550 555 560
Arg Met Leu Thr Phe Asn Pro Asn Lys Arg Ile Thr Val Glu Glu Ala
565 570 575
Leu Ala His Pro Tyr Leu Glu Gln Tyr Tyr Asp Pro Thr Asp Glu Pro
580 585 590
Val Ala Glu Glu Pro Phe Thr Phe Ala Met Glu Leu Asp Asp Leu Pro
595 600 605
Lys Glu Arg Leu Lys Glu Leu Ile Phe Gln Glu Thr Ala Arg Phe Gln

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Pro Gly Val Leu Glu Ala Pro
625 630

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gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc      96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
20 25 30
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc      144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
35 40 45
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc      192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
50 55 60
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag      240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65 70 75 80
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag      288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
85 90 95
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag      336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
100 105 110
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc      384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
115 120 125
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac      432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
130 135 140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac      480
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145 150 155 160
ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc      528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
165 170 175
gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc      576
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly

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| | | | | | | | | | | | | | | | | | |
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| Pro | Val | Leu | Leu | Pro | Asp | Asn | His | Tyr | Leu | Ser | Thr | Gln | Ser | Ala | Leu | | |
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| agc | aaa | gac | ccc | aac | gag | aag | cgc | gat | cac | atg | gtc | ctg | ctg | gag | ttc | | 672 |
| Ser | Lys | Asp | Pro | Asn | Glu | Lys | Arg | Asp | His | Met | Val | Leu | Leu | Glu | Phe | | |
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| gga | ctc | aga | tct | cga | gta | acc | atg | gcg | gcg | gcg | gcg | gcg | gcg | ggc | ccg | | 768 |
| Gly | Leu | Arg | Ser | Arg | Val | Thr | Met | Ala | Ala | Ala | Ala | Ala | Ala | Gly | Pro | | |
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| gag | atg | gtc | cgc | ggg | cag | gtg | ttc | gac | gtg | ggg | ccg | cgc | tac | act | aat | | 816 |
| Glu | Met | Val | Arg | Gly | Gln | Val | Phe | Asp | Val | Gly | Pro | Arg | Tyr | Thr | Asn | | |
| | | 260 | | | | | | 265 | | | | | 270 | | | | |
| ctc | tcg | tac | atc | gga | gaa | ggc | gcc | tac | ggc | atg | gtt | tgt | tct | gct | tat | | 864 |
| Leu | Ser | Tyr | Ile | Gly | Glu | Gly | Ala | Tyr | Gly | Met | Val | Cys | Ser | Ala | Tyr | | |
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| gat | aat | ctc | aac | aaa | gtt | cga | gtt | gct | atc | aag | aaa | atc | agt | cct | ttt | | 912 |
| Asp | Asn | Leu | Asn | Lys | Val | Arg | Val | Ala | Ile | Lys | Lys | Ile | Ser | Pro | Phe | | |
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| Leu | Arg | Phe | Arg | His | Glu | Asn | Ile | Ile | Gly | Ile | Asn | Asp | Ile | Ile | Arg | | |
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| Ala | Pro | Thr | Ile | Glu | Gln | Met | Lys | Asp | Val | Tyr | Ile | Val | Gln | Asp | Leu | | |
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| Met | Glu | Thr | Asp | Leu | Tyr | Lys | Leu | Lys | Thr | Gln | His | Leu | Ser | Asn | | | |
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| Asp | His | Ile | Cys | Tyr | Phe | Leu | Tyr | Gln | Ile | Leu | Arg | Gly | Leu | Lys | Tyr | | |
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| Ile | His | Ser | Ala | Asn | Val | Leu | His | Arg | Asp | Leu | Lys | Pro | Ser | Asn | Leu | | |
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| Arg | Val | Ala | Asp | Pro | Asp | His | Asp | His | Thr | Gly | Phe | Leu | Thr | Glu | Tyr | | |
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| gta | gcc | acg | cgt | tgg | tac | aga | gct | cca | gaa | att | atg | ttg | aat | tcc | aag | | 1344 |
| Val | Ala | Thr | Arg | Trp | Tyr | Arg | Ala | Pro | Glu | Ile | Met | Leu | Asn | Ser | Lys | | |
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| ggt | tat | acc | aag | tcc | att | gat | att | tgg | tct | gtg | ggc | tgc | atc | ctg | gca | | 1392 |
| Gly | Tyr | Thr | Lys | Ser | Ile | Asp | Ile | Trp | Ser | Val | Gly | Cys | Ile | Leu | Ala | | |
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| gag | atg | cta | tcc | aac | agg | cct | atc | ttc | cca | gga | aag | cat | tac | ctt | gac | | 1440 |
| Glu | Met | Leu | Ser | Asn | Arg | Pro | Ile | Phe | Pro | Gly | Lys | His | Tyr | Leu | Asp | | |
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| cag | ctg | aat | cac | atc | ctg | ggt | att | ctt | gga | tct | cca | tca | cag | gaa | gat | | 1488 |
| Gln | Leu | Asn | His | Ile | Leu | Gly | Ile | Leu | Gly | Ser | Pro | Ser | Gln | Glu | Asp | | |
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| ctg | aat | tgt | ata | ata | aat | tta | aaa | gct | aga | aac | tat | ttg | ctt | tct | ctc | | 1536 |
| Leu | Asn | Cys | Ile | Ile | Asn | Leu | Lys | Ala | Arg | Asn | Tyr | Leu | Leu | Ser | Leu | | |
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| ccg | cac | aaa | aat | aag | gtg | ccg | tgg | aac | agg | ttg | ttc | cca | aac | gct | gac | | 1584 |
| Pro | His | Lys | Asn | Lys | Val | Pro | Trp | Asn | Arg | Leu | Phe | Pro | Asn | Ala | Asp | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
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| Gly | Leu | Arg | Ser | Arg | Val | Thr | Met | Ala | Ala | Ala | Ala | Ala | Ala | Gly | Pro |
| | | | | 245 | | | | | 250 | | | | | | 255 |
| Glu | Met | Val | Arg | Gly | Gln | Val | Phe | Asp | Val | Gly | Pro | Arg | Tyr | Thr | Asn |
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| Leu | Ser | Tyr | Ile | Gly | Glu | Gly | Ala | Tyr | Gly | Met | Val | Cys | Ser | Ala | Tyr |
| | | 275 | | | | | 280 | | | | | 285 | | | |
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| Leu | Arg | Phe | Arg | His | Glu | Asn | Ile | Ile | Gly | Ile | Asn | Asp | Ile | Ile | Arg |
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| Ala | Pro | Thr | Ile | Glu | Gln | Met | Lys | Asp | Val | Tyr | Ile | Val | Gln | Asp | Leu |
| | | | 340 | | | | | 345 | | | | | 350 | | |
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| Ile | His | Ser | Ala | Asn | Val | Leu | His | Arg | Asp | Leu | Lys | Pro | Ser | Asn | Leu |
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| | | | 420 | | | | | 425 | | | | | 430 | | |
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| | | | 435 | | | | 440 | | | | | 445 | | | |
| Gly | Tyr | Thr | Lys | Ser | Ile | Asp | Ile | Trp | Ser | Val | Gly | Cys | Ile | Leu | Ala |
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| Glu | Met | Leu | Ser | Asn | Arg | Pro | Ile | Phe | Pro | Gly | Lys | His | Tyr | Leu | Asp |
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| Gln | Leu | Asn | His | Ile | Leu | Gly | Ile | Leu | Gly | Ser | Pro | Ser | Gln | Glu | Asp |
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| Leu | Asn | Cys | Ile | Ile | Asn | Leu | Lys | Ala | Arg | Asn | Tyr | Leu | Leu | Ser | Leu |
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| Lys | Arg | Ile | Glu | Val | Glu | Gln | Ala | Leu | Ala | His | Pro | Tyr | Leu | Glu | Gln |
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| Tyr | Tyr | Asp | Pro | Ser | Asp | Glu | Pro | Ile | Ala | Glu | Ala | Pro | Phe | Lys | Phe |
| | | | 565 | | | | | | 570 | | | | | 575 | |
| Asp | Met | Glu | Leu | Asp | Asp | Leu | Pro | Lys | Glu | Lys | Leu | Lys | Glu | Leu | Ile |
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gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc      96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
20      25      30
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc      144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
35      40      45
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc      192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
50      55      60
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag      240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65      70      75      80
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag      288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
85      90      95
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag      336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
100      105      110
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc      384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
115      120      125
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac      432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
130      135      140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac      480
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145      150      155      160
ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc      528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
165      170      175
gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc      576
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
180      185      190
ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg      624
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
195      200      205
agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc      672
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
210      215      220
gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc      720
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225      230      235      240
gga ctc aga tct cga gct caa gct tcg aat tcg tca atg gag ctg gaa      768
Gly Leu Arg Ser Arg Ala Gln Ala Ser Asn Ser Ser Met Glu Leu Glu
245      250      255
aac atc gtg gcc aac acg gtc ttg ctg aaa gcc agg gaa ggg ggc gga      816
Asn Ile Val Ala Asn Thr Val Leu Leu Lys Ala Arg Glu Gly Gly Gly
260      265      270
gga aag cgc aaa ggg aaa agc aag tgg aaa gaa atc ctg aag ttc      864
Gly Lys Arg Lys Gly Lys Ser Lys Lys Trp Lys Glu Ile Leu Lys Phe
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| | 290 | | | | | 295 | | | | | 300 | | | | | |
| tac | tgc | agt | tta | tgt | gac | aag | cag | cca | atc | ggg | agg | ctg | ctt | ttc | cgg | 960 |
| Tyr | Cys | Ser | Leu | Cys | Asp | Lys | Gln | Pro | Ile | Gly | Arg | Leu | Leu | Phe | Arg | |
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| cag | ttt | tgt | gaa | acc | agg | cct | ggg | ctg | gag | tgt | tac | att | cag | ttc | ctg | 1008 |
| Gln | Phe | Cys | Glu | Thr | Arg | Pro | Gly | Leu | Glu | Cys | Tyr | Ile | Gln | Phe | Leu | |
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| gac | tcc | gtg | gca | gaa | tat | gaa | gtt | act | cca | gat | gaa | aaa | ctg | gga | gag | 1056 |
| Asp | Ser | Val | Ala | Glu | Tyr | Glu | Val | Thr | Pro | Asp | Glu | Lys | Leu | Gly | Glu | |
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| aaa | ggg | aag | gaa | att | atg | acc | aag | tac | ctc | acc | cca | aag | tcc | cct | gtt | 1104 |
| Lys | Gly | Lys | Glu | Ile | Met | Thr | Lys | Tyr | Leu | Thr | Pro | Lys | Ser | Pro | Val | |
| | | 355 | | | | | 360 | | | | | 365 | | | | |
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| Phe | Ile | Ala | Gln | Val | Gly | Gln | Asp | Leu | Val | Ser | Gln | Thr | Glu | Glu | Lys | |
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| ctc | cta | cag | aag | ccg | tgc | aaa | gaa | ctc | ttt | tct | gcc | tgt | gca | cag | tct | 1200 |
| Leu | Leu | Gln | Lys | Pro | Cys | Lys | Glu | Leu | Phe | Ser | Ala | Cys | Ala | Gln | Ser | |
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| | | | 405 | | | | | 410 | | | | | 415 | | | |
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| Met | Phe | Phe | Asp | Arg | Phe | Leu | Gln | Trp | Lys | Trp | Leu | Glu | Arg | Gln | Pro | |
| | | | 420 | | | | | 425 | | | | | 430 | | | |
| gtg | acc | aaa | aac | act | ttc | agg | cag | tat | cga | gtg | cta | gga | aaa | ggg | ggc | 1344 |
| Val | Thr | Lys | Asn | Thr | Phe | Arg | Gln | Tyr | Arg | Val | Leu | Gly | Lys | Gly | Gly | |
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| Phe | Gly | Glu | Val | Cys | Ala | Cys | Gln | Val | Arg | Ala | Thr | Gly | Lys | Met | Tyr | |
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| Ala | Cys | Lys | Arg | Leu | Glu | Lys | Lys | Arg | Ile | Lys | Lys | Arg | Lys | Gly | Glu | |
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| | | | 500 | | | | | 505 | | | | | 510 | | | |
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| Leu | Val | Leu | Thr | Ile | Met | Asn | Gly | Gly | Asp | Leu | Lys | Phe | His | Ile | Tyr | |
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| Asn | Met | Gly | Asn | Pro | Gly | Phe | Glu | Glu | Glu | Arg | Ala | Leu | Phe | Tyr | Ala | |
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| Ala | Glu | Ile | Leu | Cys | Gly | Leu | Glu | Asp | Leu | His | Arg | Glu | Asn | Thr | Val | |
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| Tyr | Arg | Asp | Leu | Lys | Pro | Glu | Asn | Ile | Leu | Leu | Asp | Asp | Tyr | Gly | His | |
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| Ile | Arg | Ile | Ser | Asp | Leu | Gly | Leu | Ala | Val | Lys | Ile | Pro | Glu | Gly | Asp | |
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| Leu | Ile | Arg | Gly | Arg | Val | Gly | Thr | Val | Gly | Tyr | Met | Ala | Pro | Glu | Val | |
| | | 595 | | | 600 | | | | | | | 605 | | | | |
| ctg | aac | aac | cag | agg | tac | ggc | ctg | agc | ccc | gac | tac | tggt | ggc | ctt | ggc | 1872 |
| Leu | Asn | Asn | Gln | Arg | Tyr | Gly | Leu | Ser | Pro | Asp | Tyr | Trp | Gly | Leu | Gly | |

| | | | |
|---|-----|-----|------|
| 610 | 615 | 620 | |
| tgc ctc atc tat gag atg atc gag ggc cag tcg ccg ttc cgc ggc cgt | | | 1920 |
| Cys Leu Ile Tyr Glu Met Ile Glu Gly Gln Ser Pro Phe Arg Gly Arg | | | |
| 625 | 630 | 635 | 640 |
| aag gag aag gtg aag cgg gag gag gtg gac cgc cgg gtc ctg gag acg | | | 1968 |
| Lys Glu Lys Val Lys Arg Glu Glu Val Asp Arg Arg Val Leu Glu Thr | | | |
| 645 | 650 | 655 | |
| gag gag gtg tac tcc cac aag ttc tcc gag gag gcc aag tcc atc tgc | | | 2016 |
| Glu Glu Val Tyr Ser His Lys Phe Ser Glu Glu Ala Lys Ser Ile Cys | | | |
| 660 | 665 | 670 | |
| aag atg ctg ctc acg aaa gat gcg aag cag agg ctg ggc tgc cag gag | | | 2064 |
| Lys Met Leu Leu Thr Lys Asp Ala Lys Gln Arg Leu Gly Cys Gln Glu | | | |
| 675 | 680 | 685 | |
| gag ggg gct gca gag gtc aag aga cac ccc ttc ttc agg aac atg aac | | | 2112 |
| Glu Gly Ala Ala Glu Val Lys Arg His Pro Phe Phe Arg Asn Met Asn | | | |
| 690 | 695 | 700 | |
| ttc aag cgc tta gaa gcc ggg atg ttg gac cct ccc ttc gtt cca gac | | | 2160 |
| Phe Lys Arg Leu Glu Ala Gly Met Leu Asp Pro Pro Phe Val Pro Asp | | | |
| 705 | 710 | 715 | 720 |
| ccc cgc gct gtg tac tgt aag gac gtg ctg gac atc gag cag ttc tcc | | | 2208 |
| Pro Arg Ala Val Tyr Cys Lys Asp Val Leu Asp Ile Glu Gln Phe Ser | | | |
| 725 | 730 | 735 | |
| act gtg aag ggc gtc aat ctg gac cac aca gac gac gac ttc tac tcc | | | 2256 |
| Thr Val Lys Gly Val Asn Leu Asp His Thr Asp Asp Asp Phe Tyr Ser | | | |
| 740 | 745 | 750 | |
| aag ttc tcc acg ggc tct gtg tcc atc cca tgg caa aac gag atg ata | | | 2304 |
| Lys Phe Ser Thr Gly Ser Val Ser Ile Pro Trp Gln Asn Glu Met Ile | | | |
| 755 | 760 | 765 | |
| gaa aca gaa tgc ttt aag gag ctg aac gtg ttt gga cct aat ggt acc | | | 2352 |
| Glu Thr Glu Cys Phe Lys Glu Leu Asn Val Phe Gly Pro Asn Gly Thr | | | |
| 770 | 775 | 780 | |
| ctc ccg cca gat ctg aac aga aac cac cct ccg gaa ccg ccc aag aaa | | | 2400 |
| Leu Pro Pro Asp Leu Asn Arg Asn His Pro Pro Glu Pro Pro Lys Lys | | | |
| 785 | 790 | 795 | 800 |
| ggg ctg ctc cag aga ctc ttc aag cgg cag cat cag aac aat tcc aag | | | 2448 |
| Gly Leu Leu Gln Arg Leu Phe Lys Arg Gln His Gln Asn Asn Ser Lys | | | |
| 805 | 810 | 815 | |
| agt tcg ccc agc tcc aag acc agt ttt aac cac cac ata aac tca aac | | | 2496 |
| Ser Ser Pro Ser Ser Lys Thr Ser Phe Asn His His Ile Asn Ser Asn | | | |
| 820 | 825 | 830 | |
| cat gtc agc tcg aac tcc acc gga agc agc tag | | | 2529 |
| His Val Ser Ser Asn Ser Thr Gly Ser Ser | | | |
| 835 | 840 | | |

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<211> 842

<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-Grk5 fusion

<400> 43

Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu

| | | | | | | | | | | | | | | |
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| 1 | | | | 5 | | | | | 10 | | | | | 15 |
| Val | Glu | Leu | Asp | Gly | Asp | Val | Asn | Gly | His | Lys | Phe | Ser | Val | Ser |
| | | | 20 | | | | | 25 | | | | | 30 | Gly |
| Glu | Gly | Glu | Gly | Asp | Ala | Thr | Tyr | Gly | Lys | Leu | Thr | Leu | Lys | Phe |
| | | 35 | | | | | 40 | | | | | 45 | | Ile |
| Cys | Thr | Thr | Gly | Lys | Leu | Pro | Val | Pro | Trp | Pro | Thr | Leu | Val | Thr |
| | 50 | | | | | 55 | | | | | 60 | | | Thr |
| Leu | Thr | Tyr | Gly | Val | Gln | Cys | Phe | Ser | Arg | Tyr | Pro | Asp | His | Met |
| 65 | | | | | 70 | | | | 75 | | | | | Lys |
| Gln | His | Asp | Phe | Phe | Lys | Ser | Ala | Met | Pro | Glu | Gly | Tyr | Val | Gln |
| | | | 85 | | | | | | 90 | | | | | Glu |
| Arg | Thr | Ile | Phe | Phe | Lys | Asp | Asp | Gly | Asn | Tyr | Lys | Thr | Arg | Ala |
| | | | 100 | | | | | 105 | | | | | 110 | Glu |
| Val | Lys | Phe | Glu | Gly | Asp | Thr | Leu | Val | Asn | Arg | Ile | Glu | Leu | Lys |
| | | 115 | | | | | 120 | | | | | 125 | | Gly |
| Ile | Asp | Phe | Lys | Glu | Asp | Gly | Asn | Ile | Leu | Gly | His | Lys | Leu | Glu |
| | 130 | | | | | 135 | | | | | 140 | | | Tyr |
| Asn | Tyr | Asn | Ser | His | Asn | Val | Tyr | Ile | Met | Ala | Asp | Lys | Gln | Lys |
| 145 | | | | 150 | | | | | 155 | | | | | Asn |
| Gly | Ile | Lys | Val | Asn | Phe | Lys | Ile | Arg | His | Asn | Ile | Glu | Asp | Gly |
| | | | 165 | | | | | 170 | | | | | 175 | Ser |
| Val | Gln | Leu | Ala | Asp | His | Tyr | Gln | Gln | Asn | Thr | Pro | Ile | Gly | Asp |
| | | 180 | | | | | | 185 | | | | 190 | | Gly |
| Pro | Val | Leu | Leu | Pro | Asp | Asn | His | Tyr | Leu | Ser | Thr | Gln | Ser | Ala |
| | 195 | | | | | 200 | | | | | 205 | | | Leu |
| Ser | Lys | Asp | Pro | Asn | Glu | Lys | Arg | Asp | His | Met | Val | Leu | Leu | Glu |
| | 210 | | | | | 215 | | | | | 220 | | | Phe |
| Val | Thr | Ala | Ala | Gly | Ile | Thr | Leu | Gly | Met | Asp | Glu | Leu | Tyr | Lys |
| 225 | | | | | 230 | | | | 235 | | | | | Ser |
| Gly | Leu | Arg | Ser | Arg | Ala | Gln | Ala | Ser | Asn | Ser | Ser | Met | Glu | Leu |
| | | | 245 | | | | | 250 | | | | | 255 | Glu |
| Asn | Ile | Val | Ala | Asn | Thr | Val | Leu | Leu | Lys | Ala | Arg | Glu | Gly | Gly |
| | | 260 | | | | | 265 | | | | | 270 | | Gly |
| Gly | Lys | Arg | Lys | Gly | Lys | Ser | Lys | Lys | Trp | Lys | Glu | Ile | Leu | Lys |
| | 275 | | | | | 280 | | | | | | 285 | | Phe |
| Pro | His | Ile | Ser | Gln | Cys | Glu | Asp | Leu | Arg | Arg | Thr | Ile | Asp | Arg |
| | 290 | | | | | 295 | | | | | 300 | | | Asp |
| Tyr | Cys | Ser | Leu | Cys | Asp | Lys | Gln | Pro | Ile | Gly | Arg | Leu | Leu | Phe |
| 305 | | | | 310 | | | | | 315 | | | | | Arg |
| Gln | Phe | Cys | Glu | Thr | Arg | Pro | Gly | Leu | Glu | Cys | Tyr | Ile | Gln | Phe |
| | | | 325 | | | | | | 330 | | | | 335 | Leu |
| Asp | Ser | Val | Ala | Glu | Tyr | Glu | Val | Thr | Pro | Asp | Glu | Lys | Leu | Gly |
| | | 340 | | | | | 345 | | | | | 350 | | Glu |
| Lys | Gly | Lys | Glu | Ile | Met | Thr | Lys | Tyr | Leu | Thr | Pro | Lys | Ser | Pro |
| | 355 | | | | | 360 | | | | | 365 | | | Val |
| Phe | Ile | Ala | Gln | Val | Gly | Gln | Asp | Leu | Val | Ser | Gln | Thr | Glu | Glu |
| | 370 | | | | 375 | | | | | | 380 | | | Lys |
| Leu | Leu | Gln | Lys | Pro | Cys | Lys | Glu | Leu | Phe | Ser | Ala | Cys | Ala | Gln |
| 385 | | | | 390 | | | | | 395 | | | | | Ser |
| Val | His | Glu | Tyr | Leu | Arg | Gly | Glu | Pro | Phe | His | Glu | Tyr | Leu | Asp |
| | | | 405 | | | | | 410 | | | | | 415 | Ser |
| Met | Phe | Phe | Asp | Arg | Phe | Leu | Gln | Trp | Lys | Trp | Leu | Glu | Arg | Gln |
| | | 420 | | | | | 425 | | | | | 430 | | Pro |
| Val | Thr | Lys | Asn | Thr | Phe | Arg | Gln | Tyr | Arg | Val | Leu | Gly | Lys | Gly |
| | 435 | | | | | | 440 | | | | | 445 | | Gly |
| Phe | Gly | Glu | Val | Cys | Ala | Cys | Gln | Val | Arg | Ala | Thr | Gly | Lys | Met |
| | 450 | | | | 455 | | | | | 460 | | | | Tyr |
| Ala | Cys | Lys | Arg | Leu | Glu | Lys | Lys | Arg | Ile | Lys | Lys | Arg | Lys | Gly |
| 465 | | | | 470 | | | | | 475 | | | | | Glu |
| Ser | Met | Ala | Leu | Asn | Glu | Lys | Gln | Ile | Leu | Glu | Lys | Val | Asn | Ser |
| | | | 485 | | | | | 490 | | | | | 495 | Gln |
| Phe | Val | Val | Asn | Leu | Ala | Tyr | Ala | Tyr | Glu | Thr | Lys | Asp | Ala | Leu |
| | | | 500 | | | | 505 | | | | | | 510 | Cys |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Val | Leu | Thr | Ile | Met | Asn | Gly | Gly | Asp | Leu | Lys | Phe | His | Ile | Tyr |
| | 515 | | | | | | 520 | | | | | 525 | | | |
| Asn | Met | Gly | Asn | Pro | Gly | Phe | Glu | Glu | Glu | Arg | Ala | Leu | Phe | Tyr | Ala |
| | 530 | | | | | 535 | | | | | 540 | | | | |
| Ala | Glu | Ile | Leu | Cys | Gly | Leu | Glu | Asp | Leu | His | Arg | Glu | Asn | Thr | Val |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 |
| Tyr | Arg | Asp | Leu | Lys | Pro | Glu | Asn | Ile | Leu | Leu | Asp | Asp | Tyr | Gly | His |
| | | | 565 | | | | | | 570 | | | | | 575 | |
| Ile | Arg | Ile | Ser | Asp | Leu | Gly | Leu | Ala | Val | Lys | Ile | Pro | Glu | Gly | Asp |
| | | | 580 | | | | | 585 | | | | | 590 | | |
| Leu | Ile | Arg | Gly | Arg | Val | Gly | Thr | Val | Gly | Tyr | Met | Ala | Pro | Glu | Val |
| | 595 | | | | | 600 | | | | | | 605 | | | |
| Leu | Asn | Asn | Gln | Arg | Tyr | Gly | Leu | Ser | Pro | Asp | Tyr | Trp | Gly | Leu | Gly |
| | 610 | | | | | 615 | | | | | 620 | | | | |
| Cys | Leu | Ile | Tyr | Glu | Met | Ile | Glu | Gly | Gln | Ser | Pro | Phe | Arg | Gly | Arg |
| 625 | | | | | 630 | | | | | 635 | | | | | 640 |
| Lys | Glu | Lys | Val | Lys | Arg | Glu | Glu | Val | Asp | Arg | Arg | Val | Leu | Glu | Thr |
| | | | 645 | | | | | | 650 | | | | | 655 | |
| Glu | Glu | Val | Tyr | Ser | His | Lys | Phe | Ser | Glu | Glu | Ala | Lys | Ser | Ile | Cys |
| | | | 660 | | | | | 665 | | | | | 670 | | |
| Lys | Met | Leu | Leu | Thr | Lys | Asp | Ala | Lys | Gln | Arg | Leu | Gly | Cys | Gln | Glu |
| | 675 | | | | | | 680 | | | | | 685 | | | |
| Glu | Gly | Ala | Ala | Glu | Val | Lys | Arg | His | Pro | Phe | Phe | Arg | Asn | Met | Asn |
| | 690 | | | | | 695 | | | | 700 | | | | | |
| Phe | Lys | Arg | Leu | Glu | Ala | Gly | Met | Leu | Asp | Pro | Pro | Phe | Val | Pro | Asp |
| 705 | | | | | 710 | | | | | 715 | | | | | 720 |
| Pro | Arg | Ala | Val | Tyr | Cys | Lys | Asp | Val | Leu | Asp | Ile | Glu | Gln | Phe | Ser |
| | | | 725 | | | | | | 730 | | | | | 735 | |
| Thr | Val | Lys | Gly | Val | Asn | Leu | Asp | His | Thr | Asp | Asp | Asp | Phe | Tyr | Ser |
| | | | 740 | | | | | 745 | | | | | 750 | | |
| Lys | Phe | Ser | Thr | Gly | Ser | Val | Ser | Ile | Pro | Trp | Gln | Asn | Glu | Met | Ile |
| | 755 | | | | | 760 | | | | | | 765 | | | |
| Glu | Thr | Glu | Cys | Phe | Lys | Glu | Leu | Asn | Val | Phe | Gly | Pro | Asn | Gly | Thr |
| | 770 | | | | | 775 | | | | | 780 | | | | |
| Leu | Pro | Pro | Asp | Leu | Asn | Arg | Asn | His | Pro | Pro | Glu | Pro | Pro | Lys | Lys |
| 785 | | | | | 790 | | | | | 795 | | | | | 800 |
| Gly | Leu | Leu | Gln | Arg | Leu | Phe | Lys | Arg | Gln | His | Gln | Asn | Asn | Ser | Lys |
| | | | 805 | | | | | | 810 | | | | | 815 | |
| Ser | Ser | Pro | Ser | Ser | Lys | Thr | Ser | Phe | Asn | His | His | Ile | Asn | Ser | Asn |
| | | | 820 | | | | | 825 | | | | | 830 | | |
| His | Val | Ser | Ser | Asn | Ser | Thr | Gly | Ser | Ser | | | | | | |
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<210> 44

<211> 1902

<212> DNA

<213> Artificial Sequence

<220>

<223> EGFP-Jnk1 fusion

<220>

<221> CDS

<222> (1)..(1899)

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gtc gag ctg gac ggc gag gta aac ggc cac aag ttc agc gtg tcc ggc      96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
20      25      30
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc      144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
35      40      45
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc      192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
50      55      60
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag      240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65      70      75      80
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag      288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
85      90      95
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag      336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
100      105      110
gtg aag ttc gag ggc gag acc ctg gtg aac cgc atc gag ctg aag ggc      384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
115      120      125
atc gac ttc aag gag gag ggc aac atc ctg ggg cac aag ctg gag tac      432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
130      135      140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac      480
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145      150      155      160
ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc      528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
165      170      175
gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gag ggc      576
Val Gln Leu Ala Asp His Tyr Gln Asn Thr Pro Ile Gly Asp Gly
180      185      190
ccc gtg ctg ctg ccc gag aac cac tac ctg agc acc cag tcc gcc ctg      624
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
195      200      205
agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc      672
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
210      215      220
gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc      720
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225      230      235      240
gga ctc aga tct cga gct cga gcc atc atg agc aga agc aag cgt gag      768
Gly Leu Arg Ser Arg Ala Arg Ala Ile Met Ser Arg Ser Lys Arg Asp
245      250      255
aac aat ttt tat agt gta gag att gga gat tct aca ttc aca gtc ctg      816
Asn Asn Phe Tyr Ser Val Glu Ile Gly Asp Ser Thr Phe Thr Val Leu
260      265      270
aaa cga tat cag aat tta aaa cct ata ggc tca gga gct caa gga ata      864
Lys Arg Tyr Gln Asn Leu Lys Pro Ile Gly Ser Gly Ala Gln Gly Ile
275      280      285
gta tgc gca gct tat gat gcc att ctt gaa aga aat gtt gca atc aag      912
Val Cys Ala Ala Tyr Asp Ala Ile Leu Glu Arg Asn Val Ala Ile Lys
290      295      300
aag cta agc cga cca ttt cag aat cag act cat gcc aag cgg gcc tac      960

```

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Lys | Leu | Ser | Arg | Pro | Phe | Gln | Asn | Gln | Thr | His | Ala | Lys | Arg | Ala | Tyr | |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 | |
| aga | gag | cta | gtt | ctt | atg | aaa | tgt | gtt | aat | cac | aaa | aat | ata | att | ggc | 1008 |
| Arg | Glu | Leu | Val | Leu | Met | Lys | Cys | Val | Asn | His | Lys | Asn | Ile | Ile | Gly | |
| | | | | 325 | | | | | 330 | | | | | 335 | | |
| ctt | ttg | aat | gtt | ttc | aca | cca | cag | aaa | tcc | cta | gaa | gaa | ttt | caa | gat | 1056 |
| Leu | Leu | Asn | Val | Phe | Thr | Pro | Gln | Lys | Ser | Leu | Glu | Glu | Phe | Gln | Asp | |
| | | | 340 | | | | | 345 | | | | | 350 | | | |
| gtt | tac | ata | gtc | atg | gag | ctc | atg | gat | gca | aat | ctt | tgc | caa | gtg | att | 1104 |
| Val | Tyr | Ile | Val | Met | Glu | Leu | Met | Asp | Ala | Asn | Leu | Cys | Gln | Val | Ile | |
| | 355 | | | | | | 360 | | | | | 365 | | | | |
| cag | atg | gag | cta | gat | cat | gaa | aga | atg | tcc | tac | ctt | ctc | tat | cag | atg | 1152 |
| Gln | Met | Glu | Leu | Asp | His | Glu | Arg | Met | Ser | Tyr | Leu | Leu | Tyr | Gln | Met | |
| | 370 | | | | | 375 | | | | | 380 | | | | | |
| ctg | tgt | gga | atc | aag | cac | ctt | cat | tct | gct | gga | att | att | cat | cgg | gac | 1200 |
| Leu | Cys | Gly | Ile | Lys | His | Leu | His | Ser | Ala | Gly | Ile | Ile | His | Arg | Asp | |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | |
| tta | aag | ccc | agt | aat | ata | gta | gta | aaa | tct | gat | tgc | act | ttg | aag | att | 1248 |
| Leu | Lys | Pro | Ser | Asn | Ile | Val | Val | Lys | Ser | Asp | Cys | Thr | Leu | Lys | Ile | |
| | | | | 405 | | | | | 410 | | | | 415 | | | |
| ctt | gac | ttc | ggt | ctg | gcc | agg | act | gca | gga | acg | agt | ttt | atg | atg | acg | 1296 |
| Leu | Asp | Phe | Gly | Leu | Ala | Arg | Thr | Ala | Gly | Thr | Ser | Phe | Met | Met | Thr | |
| | | | 420 | | | | | 425 | | | | | 430 | | | |
| cct | tat | gta | gtg | act | cgc | tac | tac | aga | gca | ccc | gag | gtc | atc | ctt | ggc | 1344 |
| Pro | Tyr | Val | Val | Thr | Arg | Tyr | Tyr | Arg | Ala | Pro | Glu | Val | Ile | Leu | Gly | |
| | | 435 | | | | | 440 | | | | | 445 | | | | |
| atg | ggc | tac | aag | gaa | aac | gtg | gat | tta | tgg | tct | gtg | ggg | tgc | att | atg | 1392 |
| Met | Gly | Tyr | Lys | Glu | Asn | Val | Asp | Leu | Trp | Ser | Val | Gly | Cys | Ile | Met | |
| | 450 | | | | | 455 | | | | | 460 | | | | | |
| gga | gaa | atg | gtt | tgc | cac | aaa | atc | ctc | ttt | cca | gga | agg | gac | tat | att | 1440 |
| Gly | Glu | Met | Val | Cys | His | Lys | Ile | Leu | Phe | Pro | Gly | Arg | Asp | Tyr | Ile | |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 | |
| gat | cag | tgg | aat | aaa | gtt | att | gaa | cag | ctt | gga | aca | cca | tgt | cct | gaa | 1488 |
| Asp | Gln | Trp | Asn | Lys | Val | Ile | Glu | Gln | Leu | Gly | Thr | Pro | Cys | Pro | Glu | |
| | | | | 485 | | | | | 490 | | | | | 495 | | |
| ttc | atg | aag | aaa | ctg | caa | cca | aca | gta | agg | act | tac | gtt | gaa | aac | aga | 1536 |
| Phe | Met | Lys | Lys | Leu | Gln | Pro | Thr | Val | Arg | Thr | Tyr | Val | Glu | Asn | Arg | |
| | | | 500 | | | | | 505 | | | | | 510 | | | |
| cct | aaa | tat | gct | gga | tat | agc | ttt | gag | aaa | ctc | ttc | cct | gat | gtc | ctt | 1584 |
| Pro | Lys | Tyr | Ala | Gly | Tyr | Ser | Phe | Glu | Lys | Leu | Phe | Pro | Asp | Val | Leu | |
| | | 515 | | | | | 520 | | | | | 525 | | | | |
| ttc | cca | gct | gac | tca | gaa | cac | aac | aaa | ctt | aaa | gcc | agt | cag | gca | agg | 1632 |
| Phe | Pro | Ala | Asp | Ser | Glu | His | Asn | Lys | Leu | Lys | Ala | Ser | Gln | Ala | Arg | |
| | 530 | | | | | 535 | | | | | 540 | | | | | |
| gat | ttg | tta | tcc | aaa | atg | ctg | gta | ata | gat | gca | tct | aaa | agg | atc | tct | 1680 |
| Asp | Leu | Leu | Ser | Lys | Met | Leu | Val | Ile | Asp | Ala | Ser | Lys | Arg | Ile | Ser | |
| | | | | | 550 | | | | | 555 | | | | | 560 | |
| gta | gat | gaa | gct | ctc | caa | cac | ccg | tac | atc | aat | gtc | tgg | tat | gat | cct | 1728 |
| Val | Asp | Glu | Ala | Leu | Gln | His | Pro | Tyr | Ile | Asn | Val | Trp | Tyr | Asp | Pro | |
| | | | | 565 | | | | | 570 | | | | | 575 | | |
| tct | gaa | gca | gaa | gct | cca | cca | cca | aag | atc | cct | gac | aag | cag | tta | gat | 1776 |
| Ser | Glu | Ala | Glu | Ala | Pro | Pro | Pro | Lys | Ile | Pro | Asp | Lys | Gln | Leu | Asp | |
| | | | 580 | | | | | 585 | | | | | 590 | | | |
| gaa | agg | gaa | cac | aca | ata | gaa | gag | tgg | aaa | gaa | ttg | ata | tat | aag | gaa | 1824 |
| Glu | Arg | Glu | His | Thr | Ile | Glu | Glu | Trp | Lys | Glu | Leu | Ile | Tyr | Lys | Glu | |
| | | 595 | | | | | 600 | | | | | 605 | | | | |
| gtt | atg | gac | ttg | gag | gag | aga | acc | aag | aat | gga | gtt | ata | cgg | ggg | cag | 1872 |
| Val | Met | Asp | Leu | Glu | Glu | Arg | Thr | Lys | Asn | Gly | Val | Ile | Arg | Gly | Gln | |
| | 610 | | | | | 615 | | | | | 620 | | | | | |
| ccc | tct | cct | tta | gca | cag | gtg | cag | cag | tga | | | | | | | 1902 |
| Pro | Ser | Pro | Leu | Ala | Gln | Val | Gln | Gln | | | | | | | | |
| | 625 | | | | | 630 | | | | | | | | | | |

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 <212> PRT
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<220>

<223> EGFP-Jnk1 fusion

<400> 45

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Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
      35      40      45
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
      50      55      60
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65      70      75      80
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
      85      90      95
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
      100     105     110
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
      115     120     125
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
      130     135     140
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145      150     155     160
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
      165     170     175
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
      180     185     190
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
      195     200     205
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
      210     215     220
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225      230     235     240
Gly Leu Arg Ser Arg Ala Arg Ala Ile Met Ser Arg Ser Lys Arg Asp
      245     250     255
Asn Asn Phe Tyr Ser Val Glu Ile Gly Asp Ser Thr Phe Thr Val Leu
      260     265     270
Lys Arg Tyr Gln Asn Leu Lys Pro Ile Gly Ser Gly Ala Gln Gly Ile
      275     280     285
Val Cys Ala Ala Tyr Asp Ala Ile Leu Glu Arg Asn Val Ala Ile Lys
      290     295     300
Lys Leu Ser Arg Pro Phe Gln Asn Gln Thr His Ala Lys Arg Ala Tyr
305      310     315     320
Arg Glu Leu Val Leu Met Lys Cys Val Asn His Lys Asn Ile Ile Gly
      325     330     335
Leu Leu Asn Val Phe Thr Pro Gln Lys Ser Leu Glu Glu Phe Gln Asp
      340     345     350
Val Tyr Ile Val Met Glu Leu Met Asp Ala Asn Leu Cys Gln Val Ile
      355     360     365

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Gln Met Glu Leu Asp His Glu Arg Met Ser Tyr Leu Leu Tyr Gln Met
 370 375 380
 Leu Cys Gly Ile Lys His Leu His Ser Ala Gly Ile Ile His Arg Asp
 385 390 395 400
 Leu Lys Pro Ser Asn Ile Val Val Lys Ser Asp Cys Thr Leu Lys Ile
 405 410 415
 Leu Asp Phe Gly Leu Ala Arg Thr Ala Gly Thr Ser Phe Met Met Thr
 420 425 430
 Pro Tyr Val Val Thr Arg Tyr Tyr Arg Ala Pro Glu Val Ile Leu Gly
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 Met Gly Tyr Lys Glu Asn Val Asp Leu Trp Ser Val Gly Cys Ile Met
 450 455 460
 Gly Glu Met Val Cys His Lys Ile Leu Phe Pro Gly Arg Asp Tyr Ile
 465 470 475 480
 Asp Gln Trp Asn Lys Val Ile Glu Gln Leu Gly Thr Pro Cys Pro Glu
 485 490 495
 Phe Met Lys Lys Leu Gln Pro Thr Val Arg Thr Tyr Val Glu Asn Arg
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 Pro Lys Tyr Ala Gly Tyr Ser Phe Glu Lys Leu Phe Pro Asp Val Leu
 515 520 525
 Phe Pro Ala Asp Ser Glu His Asn Lys Leu Lys Ala Ser Gln Ala Arg
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 Asp Leu Leu Ser Lys Met Leu Val Ile Asp Ala Ser Lys Arg Ile Ser
 545 550 555 560
 Val Asp Glu Ala Leu Gln His Pro Tyr Ile Asn Val Trp Tyr Asp Pro
 565 570 575
 Ser Glu Ala Glu Ala Pro Pro Pro Lys Ile Pro Asp Lys Gln Leu Asp
 580 585 590
 Glu Arg Glu His Thr Ile Glu Glu Trp Lys Glu Leu Ile Tyr Lys Glu
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 Val Met Asp Leu Glu Glu Arg Thr Lys Asn Gly Val Ile Arg Gly Gln
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<220>

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 1 5 10 15
 gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc 96

| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|------|
| Val | Glu | Leu | Asp | Gly | Asp | Val | Asn | Gly | His | Lys | Phe | Ser | Val | Ser | Gly | | |
| | | | 20 | | | | | 25 | | | | | 30 | | | | |
| gag | ggc | gag | ggc | gat | gcc | acc | tac | ggc | aag | ctg | acc | ctg | aag | ttc | atc | | 144 |
| Glu | Gly | Glu | Gly | Asp | Ala | Thr | Tyr | Gly | Lys | Leu | Thr | Leu | Lys | Phe | Ile | | |
| | | 35 | | | | | 40 | | | | | 45 | | | | | |
| tgc | acc | acc | ggc | aag | ctg | ccc | gtg | ccc | tgg | ccc | acc | ctc | gtg | acc | acc | | 192 |
| Cys | Thr | Thr | Gly | Lys | Leu | Pro | Val | Pro | Trp | Pro | Thr | Leu | Val | Thr | Thr | | |
| | 50 | | | | | 55 | | | | | 60 | | | | | | |
| ctg | acc | tac | ggc | gtg | cag | tgc | ttc | agc | cgc | tac | ccc | gac | cac | atg | aag | | 240 |
| Leu | Thr | Tyr | Gly | Val | Gln | Cys | Phe | Ser | Arg | Tyr | Pro | Asp | His | Met | Lys | | |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 | | |
| cag | cac | gac | ttc | ttc | aag | tcc | gcc | atg | ccc | gaa | ggc | tac | gtc | cag | gag | | 288 |
| Gln | His | Asp | Phe | Phe | Lys | Ser | Ala | Met | Pro | Glu | Gly | Tyr | Val | Gln | Glu | | |
| | | | 85 | | | | | | 90 | | | | | 95 | | | |
| cgc | acc | atc | ttc | ttc | aag | gac | gac | ggc | aac | tac | aag | acc | cgc | gcc | gag | | 336 |
| Arg | Thr | Ile | Phe | Phe | Lys | Asp | Asp | Gly | Asn | Tyr | Lys | Thr | Arg | Ala | Glu | | |
| | | 100 | | | | | | 105 | | | | | 110 | | | | |
| gtg | aag | ttc | gag | ggc | gac | acc | ctg | gtg | aac | cgc | atc | gag | ctg | aag | ggc | | 384 |
| Val | Lys | Phe | Glu | Gly | Asp | Thr | Leu | Val | Asn | Arg | Ile | Glu | Leu | Lys | Gly | | |
| | 115 | | | | | | 120 | | | | | 125 | | | | | |
| atc | gac | ttc | aag | gag | gac | ggc | aac | atc | ctg | ggg | cac | aag | ctg | gag | tac | | 432 |
| Ile | Asp | Phe | Lys | Glu | Asp | Gly | Asn | Ile | Leu | Gly | His | Lys | Leu | Glu | Tyr | | |
| | 130 | | | | | 135 | | | | | 140 | | | | | | |
| aac | tac | aac | agc | cac | aac | gtc | tat | atc | atg | gcc | gac | aag | cag | aag | aac | | 480 |
| Asn | Tyr | Asn | Ser | His | Asn | Val | Tyr | Ile | Met | Ala | Asp | Lys | Gln | Lys | Asn | | |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 | | |
| ggc | atc | aag | gtg | aac | ttc | aag | atc | cgc | cac | aac | atc | gag | gac | ggc | agc | | 528 |
| Gly | Ile | Lys | Val | Asn | Phe | Lys | Ile | Arg | His | Asn | Ile | Glu | Asp | Gly | Ser | | |
| | | | 165 | | | | | 170 | | | | | | 175 | | | |
| gtg | cag | ctc | gcc | gac | cac | tac | cag | cag | aac | acc | ccc | atc | ggc | gac | ggc | | 576 |
| Val | Gln | Leu | Ala | Asp | His | Tyr | Gln | Gln | Asn | Thr | Pro | Ile | Gly | Asp | Gly | | |
| | | 180 | | | | | 185 | | | | | | 190 | | | | |
| ccc | gtg | ctg | ctg | ccc | gac | aac | cac | tac | ctg | agc | acc | cag | tcc | gcc | ctg | | 624 |
| Pro | Val | Leu | Leu | Pro | Asp | Asn | His | Tyr | Leu | Ser | Thr | Gln | Ser | Ala | Leu | | |
| | 195 | | | | | 200 | | | | | | 205 | | | | | |
| agc | aaa | gac | ccc | aac | gag | aag | cgc | gat | cac | atg | gtc | ctg | ctg | gag | ttc | | 672 |
| Ser | Lys | Asp | Pro | Asn | Glu | Lys | Arg | Asp | His | Met | Val | Leu | Leu | Glu | Phe | | |
| | 210 | | | | | 215 | | | | | 220 | | | | | | |
| gtg | acc | gcc | gcc | ggg | atc | act | ctc | ggc | atg | gac | gag | ctg | tac | aag | tcc | | 720 |
| Val | Thr | Ala | Ala | Gly | Ile | Thr | Leu | Gly | Met | Asp | Glu | Leu | Tyr | Lys | Ser | | |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 | | |
| gga | ctc | aga | tct | cga | ggg | aaa | atg | tct | cag | gag | agg | ccc | acg | ttc | tac | | 768 |
| Gly | Leu | Arg | Ser | Arg | Gly | Lys | Met | Ser | Gln | Glu | Arg | Pro | Thr | Phe | Tyr | | |
| | | | 245 | | | | | 250 | | | | | | 255 | | | |
| cgg | cag | gag | ctg | aac | aag | aca | atc | tgg | gag | gtg | ccc | gag | cgt | tac | cag | | 816 |
| Arg | Gln | Glu | Leu | Asn | Lys | Thr | Ile | Trp | Glu | Val | Pro | Glu | Arg | Tyr | Gln | | |
| | | 260 | | | | | | 265 | | | | | 270 | | | | |
| aac | ctg | tct | cca | gtg | ggc | tct | ggc | gcc | tat | ggc | tct | gtg | tgt | gct | gct | | 864 |
| Asn | Leu | Ser | Pro | Val | Gly | Ser | Gly | Ala | Tyr | Gly | Ser | Val | Cys | Ala | Ala | | |
| | 275 | | | | | 280 | | | | | | 285 | | | | | |
| ttt | gac | aca | aaa | acg | ggg | tta | cgt | gtg | gca | gtg | aag | aag | ctc | tcc | aga | | 912 |
| Phe | Asp | Thr | Lys | Thr | Gly | Leu | Arg | Val | Ala | Val | Lys | Lys | Leu | Ser | Arg | | |
| | 290 | | | | | 295 | | | | | 300 | | | | | | |
| cca | ttt | cag | tcc | atc | att | cat | gcg | aaa | aga | acc | tac | aga | gaa | ctg | cgg | | 960 |
| Pro | Phe | Gln | Ser | Ile | Ile | His | Ala | Lys | Arg | Thr | Tyr | Arg | Glu | Leu | Arg | | |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 | | |
| tta | ctt | aaa | cat | atg | aaa | cat | gaa | aat | gtg | att | ggt | ctg | ttg | gac | gtt | | 1008 |
| Leu | Leu | Lys | His | Met | Lys | His | Glu | Asn | Val | Ile | Gly | Leu | Leu | Asp | Val | | |
| | | | 325 | | | | | 330 | | | | | | 335 | | | |
| ttt | aca | cct | gca | agg | tct | ctg | gag | gaa | ttc | aat | gat | gtg | tat | ctg | gtg | | 1056 |
| Phe | Thr | Pro | Ala | Arg | Ser | Leu | Glu | Glu | Phe | Asn | Asp | Val | Tyr | Leu | Val | | |
| | | 340 | | | | | | 345 | | | | | 350 | | | | |
| acc | cat | ctc | atg | ggg | gca | gat | ctg | aac | aac | att | gtg | aaa | tgt | cag | aag | | 1104 |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Thr | His | Leu | Met | Gly | Ala | Asp | Leu | Asn | Asn | Ile | Val | Lys | Cys | Gln | Lys | |
| 355 | | | | | | | 360 | | | | | 365 | | | | |
| ctt | aca | gat | gac | cat | gtt | cag | ttc | ctt | atc | tac | caa | att | ctc | cga | ggt | 1152 |
| Leu | Thr | Asp | Asp | His | Val | Gln | Phe | Leu | Ile | Tyr | Gln | Ile | Leu | Arg | Gly | |
| 370 | | | | | | 375 | | | | | 380 | | | | | |
| cta | aag | tat | ata | cat | tca | gct | gac | ata | att | cac | agg | gac | cta | aaa | cct | 1200 |
| Leu | Lys | Tyr | Ile | His | Ser | Ala | Asp | Ile | Ile | His | Arg | Asp | Leu | Lys | Pro | |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | |
| agt | aat | cta | gct | gtg | aat | gaa | gac | tgt | gag | ctg | aag | att | ctg | gat | ttt | 1248 |
| Ser | Asn | Leu | Ala | Val | Asn | Glu | Asp | Cys | Glu | Leu | Lys | Ile | Leu | Asp | Phe | |
| | | | | 405 | | | | | 410 | | | | | | 415 | |
| gga | ctg | gct | cgg | cac | aca | gat | gat | gaa | atg | aca | ggc | tac | gtg | gcc | act | 1296 |
| Gly | Leu | Ala | Arg | His | Thr | Asp | Asp | Glu | Met | Thr | Gly | Tyr | Val | Ala | Thr | |
| | | | 420 | | | | | 425 | | | | | 430 | | | |
| agg | tgg | tac | agg | gct | cct | gag | atc | atg | ctg | aac | tgg | atg | cat | tac | aac | 1344 |
| Arg | Trp | Tyr | Arg | Ala | Pro | Glu | Ile | Met | Leu | Asn | Trp | Met | His | Tyr | Asn | |
| | | 435 | | | | | 440 | | | | | | 445 | | | |
| cag | aca | gtt | gat | att | tgg | tca | gtg | gga | tgc | ata | atg | gcc | gag | ctg | ttg | 1392 |
| Gln | Thr | Val | Asp | Ile | Trp | Ser | Val | Gly | Cys | Ile | Met | Ala | Glu | Leu | Leu | |
| | 450 | | | | | 455 | | | | | 460 | | | | | |
| act | gga | aga | aca | ttg | ttt | cct | ggt | aca | gac | cat | att | gat | cag | ttg | aag | 1440 |
| Thr | Gly | Arg | Thr | Leu | Phe | Pro | Gly | Thr | Asp | His | Ile | Asp | Gln | Leu | Lys | |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 | |
| ctc | att | tta | aga | ctc | gtt | gga | acc | cca | ggg | gct | gag | ctt | ttg | aag | aaa | 1488 |
| Leu | Ile | Leu | Arg | Leu | Val | Gly | Thr | Pro | Gly | Ala | Glu | Leu | Leu | Lys | Lys | |
| | | | 485 | | | | | | 490 | | | | | 495 | | |
| atc | tcc | tca | gag | tct | gca | aga | aac | tat | att | cag | tct | ttg | act | cag | atg | 1536 |
| Ile | Ser | Ser | Glu | Ser | Ala | Arg | Asn | Tyr | Ile | Gln | Ser | Leu | Thr | Gln | Met | |
| | | | 500 | | | | | 505 | | | | | 510 | | | |
| ccg | aag | atg | aac | ttt | gcg | aat | gta | ttt | att | ggt | gcc | aat | ccc | ctg | gct | 1584 |
| Pro | Lys | Met | Asn | Phe | Ala | Asn | Val | Phe | Ile | Gly | Ala | Asn | Pro | Leu | Ala | |
| | | 515 | | | | | 520 | | | | | 525 | | | | |
| gtc | gac | ttg | ctg | gag | aag | atg | ctt | gta | ttg | gac | tca | gat | aag | aga | att | 1632 |
| Val | Asp | Leu | Leu | Glu | Lys | Met | Leu | Val | Leu | Asp | Ser | Asp | Lys | Arg | Ile | |
| | 530 | | | | | 535 | | | | | 540 | | | | | |
| aca | gcg | gcc | caa | gcc | ctt | gca | cat | gcc | tac | ttt | gct | cag | tac | cac | gat | 1680 |
| Thr | Ala | Ala | Gln | Ala | Leu | Ala | His | Ala | Tyr | Phe | Ala | Gln | Tyr | His | Asp | |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 | |
| cct | gat | gat | gaa | cca | gtg | gcc | gat | cct | tat | gat | cag | tcc | ttt | gaa | agc | 1728 |
| Pro | Asp | Asp | Glu | Pro | Val | Ala | Asp | Pro | Tyr | Asp | Gln | Ser | Phe | Glu | Ser | |
| | | | 565 | | | | | | 570 | | | | | 575 | | |
| agg | gac | ctc | ctt | ata | gat | gag | tgg | aaa | agc | ctg | acc | tat | gat | gaa | gtc | 1776 |
| Arg | Asp | Leu | Leu | Ile | Asp | Glu | Trp | Lys | Ser | Leu | Thr | Tyr | Asp | Glu | Val | |
| | | | 580 | | | | | 585 | | | | | 590 | | | |
| atc | agc | ttt | gtg | cca | cca | ccc | ctt | gac | caa | gaa | gag | atg | gag | tcc | tga | 1824 |
| Ile | Ser | Phe | Val | Pro | Pro | Pro | Leu | Asp | Gln | Glu | Glu | Met | Glu | Ser | | |
| | | 595 | | | | | 600 | | | | | 605 | | | | |

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<211> 607

<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-p38 fusion

<400> 47

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| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Val | Glu | Leu | Asp | Gly | Asp | Val | Asn | Gly | His | Lys | Phe | Ser | Val | Ser | Gly |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Glu | Gly | Glu | Gly | Asp | Ala | Thr | Tyr | Gly | Lys | Leu | Thr | Leu | Lys | Phe | Ile |
| | | 35 | | | | | 40 | | | | | 45 | | | |
| Cys | Thr | Thr | Gly | Lys | Leu | Pro | Val | Pro | Trp | Pro | Thr | Leu | Val | Thr | Thr |
| | 50 | | | | | 55 | | | | | 60 | | | | |
| Leu | Thr | Tyr | Gly | Val | Gln | Cys | Phe | Ser | Arg | Tyr | Pro | Asp | His | Met | Lys |
| 65 | | | | | 70 | | | | | 75 | | | | 80 | |
| Gln | His | Asp | Phe | Phe | Lys | Ser | Ala | Met | Pro | Glu | Gly | Tyr | Val | Gln | Glu |
| | | | 85 | | | | | | 90 | | | | | 95 | |
| Arg | Thr | Ile | Phe | Phe | Lys | Asp | Asp | Gly | Asn | Tyr | Lys | Thr | Arg | Ala | Glu |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Val | Lys | Phe | Glu | Gly | Asp | Thr | Leu | Val | Asn | Arg | Ile | Glu | Leu | Lys | Gly |
| | | 115 | | | | | 120 | | | | | 125 | | | |
| Ile | Asp | Phe | Lys | Glu | Asp | Gly | Asn | Ile | Leu | Gly | His | Lys | Leu | Glu | Tyr |
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| Asn | Tyr | Asn | Ser | His | Asn | Val | Tyr | Ile | Met | Ala | Asp | Lys | Gln | Lys | Asn |
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| Gly | Ile | Lys | Val | Asn | Phe | Lys | Ile | Arg | His | Asn | Ile | Glu | Asp | Gly | Ser |
| | | | | 165 | | | | | 170 | | | | | 175 | |
| Val | Gln | Leu | Ala | Asp | His | Tyr | Gln | Gln | Asn | Thr | Pro | Ile | Gly | Asp | Gly |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Pro | Val | Leu | Leu | Pro | Asp | Asn | His | Tyr | Leu | Ser | Thr | Gln | Ser | Ala | Leu |
| | | 195 | | | | 200 | | | | | | 205 | | | |
| Ser | Lys | Asp | Pro | Asn | Glu | Lys | Arg | Asp | His | Met | Val | Leu | Leu | Glu | Phe |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Val | Thr | Ala | Ala | Gly | Ile | Thr | Leu | Gly | Met | Asp | Glu | Leu | Tyr | Lys | Ser |
| 225 | | | | | 230 | | | | | 235 | | | | 240 | |
| Gly | Leu | Arg | Ser | Arg | Gly | Lys | Met | Ser | Gln | Glu | Arg | Pro | Thr | Phe | Tyr |
| | | | 245 | | | | | | 250 | | | | | 255 | |
| Arg | Gln | Glu | Leu | Asn | Lys | Thr | Ile | Trp | Glu | Val | Pro | Glu | Arg | Tyr | Gln |
| | | | 260 | | | | | 265 | | | | | 270 | | |
| Asn | Leu | Ser | Pro | Val | Gly | Ser | Gly | Ala | Tyr | Gly | Ser | Val | Cys | Ala | Ala |
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| Phe | Asp | Thr | Lys | Thr | Gly | Leu | Arg | Val | Ala | Val | Lys | Lys | Leu | Ser | Arg |
| | 290 | | | | 295 | | | | | | 300 | | | | |
| Pro | Phe | Gln | Ser | Ile | Ile | His | Ala | Lys | Arg | Thr | Tyr | Arg | Glu | Leu | Arg |
| 305 | | | | | 310 | | | | | 315 | | | | 320 | |
| Leu | Leu | Lys | His | Met | Lys | His | Glu | Asn | Val | Ile | Gly | Leu | Leu | Asp | Val |
| | | | | 325 | | | | | 330 | | | | | 335 | |
| Phe | Thr | Pro | Ala | Arg | Ser | Leu | Glu | Glu | Phe | Asn | Asp | Val | Tyr | Leu | Val |
| | | | 340 | | | | | 345 | | | | | 350 | | |
| Thr | His | Leu | Met | Gly | Ala | Asp | Leu | Asn | Asn | Ile | Val | Lys | Cys | Gln | Lys |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Leu | Thr | Asp | Asp | His | Val | Gln | Phe | Leu | Ile | Tyr | Gln | Ile | Leu | Arg | Gly |
| | 370 | | | | | 375 | | | | | 380 | | | | |
| Leu | Lys | Tyr | Ile | His | Ser | Ala | Asp | Ile | Ile | His | Arg | Asp | Leu | Lys | Pro |
| 385 | | | | | 390 | | | | | 395 | | | | 400 | |
| Ser | Asn | Leu | Ala | Val | Asn | Glu | Asp | Cys | Glu | Leu | Lys | Ile | Leu | Asp | Phe |
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| Gly | Leu | Ala | Arg | His | Thr | Asp | Asp | Glu | Met | Thr | Gly | Tyr | Val | Ala | Thr |
| | | | 420 | | | | | 425 | | | | | 430 | | |
| Arg | Trp | Tyr | Arg | Ala | Pro | Glu | Ile | Met | Leu | Asn | Trp | Met | His | Tyr | Asn |
| | | | 435 | | | | 440 | | | | | 445 | | | |
| Gln | Thr | Val | Asp | Ile | Trp | Ser | Val | Gly | Cys | Ile | Met | Ala | Glu | Leu | Leu |
| | 450 | | | | | 455 | | | | | 460 | | | | |
| Thr | Gly | Arg | Thr | Leu | Phe | Pro | Gly | Thr | Asp | His | Ile | Asp | Gln | Leu | Lys |
| 465 | | | | | 470 | | | | | 475 | | | | 480 | |

| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|------|
| Val | Lys | Phe | Glu | Gly | Asp | Thr | Leu | Val | Asn | Arg | Ile | Glu | Leu | Lys | Gly | | |
| | | 115 | | | | | 120 | | | | | 125 | | | | | |
| atc | gac | ttc | aag | gag | gac | ggc | aac | atc | ctg | ggg | cac | aag | ctg | gag | tac | | 432 |
| Ile | Asp | Phe | Lys | Glu | Asp | Gly | Asn | Ile | Leu | Gly | His | Lys | Leu | Glu | Tyr | | |
| | | 130 | | | | 135 | | | | | 140 | | | | | | |
| aac | tac | aac | agc | cac | aac | gtc | tat | atc | atg | gcc | gac | aag | cag | aag | aac | | 480 |
| Asn | Tyr | Asn | Ser | His | Asn | Val | Tyr | Ile | Met | Ala | Asp | Lys | Gln | Lys | Asn | | |
| | | 145 | | | 150 | | | | | 155 | | | | | 160 | | |
| ggc | atc | aag | gtg | aac | ttc | aag | atc | cgc | cac | aac | atc | gag | gac | ggc | agc | | 528 |
| Gly | Ile | Lys | Val | Asn | Phe | Lys | Ile | Arg | His | Asn | Ile | Glu | Asp | Gly | Ser | | |
| | | | 165 | | | | | 170 | | | | | | 175 | | | |
| gtg | cag | ctc | gcc | gac | cac | tac | cag | cag | aac | acc | ccc | atc | ggc | gac | ggc | | 576 |
| Val | Gln | Leu | Ala | Asp | His | Tyr | Gln | Gln | Asn | Thr | Pro | Ile | Gly | Asp | Gly | | |
| | | 180 | | | | | 185 | | | | | | 190 | | | | |
| ccc | gtg | ctg | ctg | ccc | gac | aac | cac | tac | ctg | agc | acc | cag | tcc | ggc | ctg | | 624 |
| Pro | Val | Leu | Leu | Pro | Asp | Asn | His | Tyr | Leu | Ser | Thr | Gln | Ser | Ala | Leu | | |
| | | 195 | | | | 200 | | | | | 205 | | | | | | |
| agc | aaa | gac | ccc | aac | gag | aag | cgc | gat | cac | atg | gtc | ctg | ctg | gag | ttc | | 672 |
| Ser | Lys | Asp | Pro | Asn | Glu | Lys | Arg | Asp | His | Met | Val | Leu | Leu | Glu | Phe | | |
| | | 210 | | | 215 | | | | | 220 | | | | | | | |
| gtg | acc | gcc | gcc | ggg | atc | act | ctc | ggc | atg | gac | gag | ctg | tac | aag | tcc | | 720 |
| Val | Thr | Ala | Ala | Gly | Ile | Thr | Leu | Gly | Met | Asp | Glu | Leu | Tyr | Lys | Ser | | |
| | | 225 | | 230 | | | | | | 235 | | | | 240 | | | |
| gga | ctc | aga | tct | atg | agt | gct | gag | ggg | tac | cag | tac | aga | gcg | ctg | tat | | 768 |
| Gly | Leu | Arg | Ser | Met | Ser | Ala | Glu | Gly | Tyr | Gln | Tyr | Arg | Ala | Leu | Tyr | | |
| | | | 245 | | | | 250 | | | | | | 255 | | | | |
| gat | tat | aaa | aag | gaa | aga | gaa | gaa | gat | att | gac | ttg | cac | ttg | ggt | gac | | 816 |
| Asp | Tyr | Lys | Lys | Glu | Arg | Glu | Glu | Asp | Ile | Asp | Leu | His | Leu | Gly | Asp | | |
| | | 260 | | | | | 265 | | | | | | 270 | | | | |
| ata | ttg | act | gtg | aat | aaa | ggg | tcc | tta | gta | gct | ctt | gga | ttc | agt | gat | | 864 |
| Ile | Leu | Thr | Val | Asn | Lys | Gly | Ser | Leu | Val | Ala | Leu | Gly | Phe | Ser | Asp | | |
| | | 275 | | | | 280 | | | | | | 285 | | | | | |
| gga | cag | gaa | gcc | agg | cct | gaa | gaa | att | ggc | tgg | tta | aat | ggc | tat | aat | | 912 |
| Gly | Gln | Gln | Ala | Arg | Pro | Glu | Glu | Ile | Gly | Trp | Leu | Asn | Gly | Tyr | Asn | | |
| | | 290 | | | 295 | | | | | 300 | | | | | | | |
| gaa | acc | aca | ggg | gaa | agg | ggg | gac | ttt | ccg | gga | act | tac | gta | gaa | tat | | 960 |
| Glu | Thr | Thr | Gly | Glu | Arg | Gly | Asp | Phe | Pro | Gly | Thr | Tyr | Val | Glu | Tyr | | |
| | | 305 | | 310 | | | | | 315 | | | | | 320 | | | |
| att | gga | agg | aaa | aaa | atc | tcg | cct | ccc | aca | cca | aag | ccc | cgg | cca | cct | | 1008 |
| Ile | Gly | Arg | Lys | Lys | Ile | Ser | Pro | Pro | Thr | Pro | Lys | Pro | Arg | Pro | Pro | | |
| | | | 325 | | | | 330 | | | | | | | 335 | | | |
| cgg | cct | ctt | cct | gtt | gca | cca | ggt | tct | tcg | aaa | act | gaa | gca | gat | gtt | | 1056 |
| Arg | Pro | Leu | Pro | Val | Ala | Pro | Gly | Ser | Ser | Lys | Thr | Glu | Ala | Asp | Val | | |
| | | 340 | | | | | 345 | | | | | | 350 | | | | |
| gaa | caa | caa | gct | ttg | act | ctc | ccg | gat | ctt | gca | gag | cag | ttt | ggc | cct | | 1104 |
| Glu | Gln | Gln | Ala | Leu | Thr | Leu | Pro | Asp | Leu | Ala | Glu | Gln | Phe | Ala | Pro | | |
| | | 355 | | | | 360 | | | | | | 365 | | | | | |
| cct | gac | att | gcc | ccg | cct | ctt | ctt | atc | aag | ctc | gtg | gaa | gcc | att | gaa | | 1152 |
| Pro | Asp | Ile | Ala | Pro | Pro | Leu | Leu | Ile | Lys | Leu | Val | Glu | Ala | Ile | Glu | | |
| | | 370 | | | 375 | | | | | 380 | | | | | | | |
| aag | aaa | ggt | ctg | gaa | tgt | tca | act | cta | tac | aga | aca | cag | agc | tcc | agc | | 1200 |
| Lys | Lys | Gly | Leu | Glu | Cys | Ser | Thr | Leu | Tyr | Arg | Thr | Gln | Ser | Ser | Ser | | |
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| aac | ctg | gca | gaa | tta | cga | cag | ctt | ctt | gat | tgt | gat | aca | ccc | tcc | gtg | | 1248 |
| Asn | Leu | Ala | Glu | Leu | Arg | Gln | Leu | Leu | Asp | Cys | Asp | Thr | Pro | Ser | Val | | |
| | | | 405 | | | | 410 | | | | | | 415 | | | | |
| gac | ttg | gaa | atg | atc | gat | gtg | cac | gtt | ttg | gct | gac | gct | ttc | aaa | cgc | | 1296 |
| Asp | Leu | Glu | Met | Ile | Asp | Val | His | Val | Leu | Ala | Asp | Ala | Phe | Lys | Arg | | |
| | | 420 | | | | | 425 | | | | | 430 | | | | | |
| tat | ctc | ctg | gac | tta | cca | aat | cct | gtc | att | cca | gca | gcc | gtt | tac | agt | | 1344 |
| Tyr | Leu | Leu | Asp | Leu | Pro | Asn | Pro | Val | Ile | Pro | Ala | Ala | Val | Tyr | Ser | | |
| | | 435 | | | | 440 | | | | | | 445 | | | | | |
| gaa | atg | att | tct | tta | gct | cca | gaa | gta | caa | agc | tcc | gaa | gaa | tat | att | | 1392 |

| | |
|---|------|
| Glu Met Ile Ser Leu Ala Pro Glu Val Gln Ser Ser Glu Glu Tyr Ile | |
| 450 455 460 | |
| cag cta ttg aag aag ctt att agg tgc cct agc ata cct cat cag tat | 1440 |
| Gln Leu Leu Lys Lys Leu Ile Arg Ser Pro Ser Ile Pro His Gln Tyr | |
| 465 470 475 480 | |
| tggttt acg ctt cag tat ttgtta aaa cat ttc ttc aag ctc tct caa | 1488 |
| Trp Leu Thr Leu Gln Tyr Leu Leu Lys His Phe Phe Lys Leu Ser Gln | |
| 485 490 495 | |
| acc tcc agc aaa aat ctgttg aat gca aga gta ctc tct gaa att ttc | 1536 |
| Thr Ser Ser Lys Asn Leu Leu Asn Ala Arg Val Leu Ser Glu Ile Phe | |
| 500 505 510 | |
| agc cct atg ctt ttc aga ttc tca gca gcc agc tct gat aat act gaa | 1584 |
| Ser Pro Met Leu Phe Arg Phe Ser Ala Ala Ser Ser Asp Asn Thr Glu | |
| 515 520 525 | |
| aac ctc ata aaa gtt ata gaa att tta atc tca act gaa tgg aat gaa | 1632 |
| Asn Leu Ile Lys Val Ile Glu Ile Leu Ile Ser Thr Glu Trp Asn Glu | |
| 530 535 540 | |
| cga cag cct gca cca gca ctg cct cct aaa cca cca aaa cct act act | 1680 |
| Arg Gln Pro Ala Pro Ala Leu Pro Pro Lys Pro Pro Lys Pro Thr Thr | |
| 545 550 555 560 | |
| gta gcc aac aac ggt atg aat aac aat atg tcc tta caa aat gct gaa | 1728 |
| Val Ala Asn Asn Gly Met Asn Asn Asn Met Ser Leu Gln Asn Ala Glu | |
| 565 570 575 | |
| tggtac tgg gga gat atc tgc agg gaa gaa gtg aat gaa aaa ctt cga | 1776 |
| Trp Tyr Trp Gly Asp Ile Ser Arg Glu Glu Val Asn Glu Lys Leu Arg | |
| 580 585 590 | |
| gat aca gca gac ggg acc ttt ttgtga cga gat gcg tct act aaa atg | 1824 |
| Asp Thr Ala Asp Gly Thr Phe Leu Val Arg Asp Ala Ser Thr Lys Met | |
| 595 600 605 | |
| cat ggt gat tat act ctt aca cta agg aaa ggg gga aat aac aaa tta | 1872 |
| His Gly Asp Tyr Thr Leu Thr Leu Arg Lys Gly Gly Asn Asn Lys Leu | |
| 610 615 620 | |
| atc aaa ata ttt cat cga gat ggg aaa tat ggc ttc tct gac cca tta | 1920 |
| Ile Lys Ile Phe His Arg Asp Gly Lys Tyr Gln Phe Ser Asp Pro Leu | |
| 625 630 635 640 | |
| acc ttc agt tct gtgtgtt gaa tta ata aac cac tac cgg aat gaa tct | 1968 |
| Thr Phe Ser Ser Val Val Glu Leu Ile Asn His Tyr Arg Asn Glu Ser | |
| 645 650 655 | |
| cta gct cag tat aat ccc aaa ttgtat gtg aaa tta ctt tat cca gta | 2016 |
| Leu Ala Gln Tyr Asn Pro Lys Leu Asp Val Lys Leu Leu Tyr Pro Val | |
| 660 665 670 | |
| tcc aaa tac caa cag gat caa gtt gtc aaa gaa gat aat att gaa gct | 2064 |
| Ser Lys Tyr Gln Gln Asp Gln Val Val Lys Glu Asp Asn Ile Glu Ala | |
| 675 680 685 | |
| gta ggg aaa aaa tta cat gaa tat aac act cag ttt caa gaa aaa agt | 2112 |
| Val Gly Lys Lys Leu His Glu Tyr Asn Thr Gln Phe Gln Glu Lys Ser | |
| 690 695 700 | |
| cga gaa tat gat aga tta tat gaa gaa tat acc cgc aca tcc cag gaa | 2160 |
| Arg Glu Tyr Asp Arg Leu Tyr Glu Glu Tyr Thr Arg Thr Ser Gln Glu | |
| 705 710 715 720 | |
| atc caa atg aaa agg aca gct att gaa gca ttt aat gaa acc ata aaa | 2208 |
| Ile Gln Met Lys Arg Thr Ala Ile Glu Ala Phe Asn Glu Thr Ile Lys | |
| 725 730 735 | |
| ata ttt gaa gaa cag tgc cag acc caa gag cgg tac agc aaa gaa tac | 2256 |
| Ile Phe Glu Glu Gln Cys Gln Thr Gln Glu Arg Tyr Ser Lys Glu Tyr | |
| 740 745 750 | |
| ata gaa aag ttt aaa cgt gaa ggc aat gag aaa gaa ata caa agg att | 2304 |
| Ile Glu Lys Phe Lys Arg Glu Gly Asn Glu Lys Glu Ile Gln Arg Ile | |
| 755 760 765 | |
| atg cat aat tat gat aag ttgttg aag tct cga atc agt gaa att att gac | 2352 |
| Met His Asn Tyr Asp Lys Leu Lys Ser Arg Ile Ser Glu Ile Ile Asp | |
| 770 775 780 | |
| agt aga aga aga ttgttg gaa gaa gac ttgttg aag aag cag gca gct gag tat | 2400 |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Ser | Arg | Arg | Arg | Leu | Glu | Glu | Asp | Leu | Lys | Lys | Gln | Ala | Ala | Glu | Tyr | |
| 785 | | | | | 790 | | | | | 795 | | | | | 800 | |
| cga | gaa | att | gac | aaa | cgt | atg | aac | agc | att | aaa | cca | gac | ctt | atc | cag | 2448 |
| Arg | Glu | Ile | Asp | Lys | Arg | Met | Asn | Ser | Ile | Lys | Pro | Asp | Leu | Ile | Gln | |
| | | | | 805 | | | | | 810 | | | | | 815 | | |
| ctg | aga | aag | acg | aga | gac | caa | tac | ttg | atg | tgg | ttg | act | caa | aaa | ggc | 2496 |
| Leu | Arg | Lys | Thr | Arg | Asp | Gln | Tyr | Leu | Met | Trp | Leu | Thr | Gln | Lys | Gly | |
| | | | | 820 | | | | 825 | | | | | 830 | | | |
| ggt | cgg | caa | aag | aag | ttg | aac | gag | tgg | ttg | ggc | aat | gaa | aac | act | gaa | 2544 |
| Val | Arg | Gln | Lys | Lys | Leu | Asn | Glu | Trp | Leu | Gly | Asn | Glu | Asn | Thr | Glu | |
| | | | | 835 | | | 840 | | | | | 845 | | | | |
| gac | caa | tat | tca | ctg | gtg | gaa | gat | gat | gaa | gat | ttg | ccc | cat | cat | gat | 2592 |
| Asp | Gln | Tyr | Ser | Leu | Val | Glu | Asp | Asp | Glu | Asp | Leu | Pro | His | His | Asp | |
| | | | | 850 | | 855 | | | | | 860 | | | | | |
| gag | aag | aca | tgg | aat | gtt | gga | agc | agc | aac | cga | aac | aaa | gct | gaa | aac | 2640 |
| Glu | Lys | Thr | Trp | Asn | Val | Gly | Ser | Ser | Asn | Arg | Asn | Lys | Ala | Glu | Asn | |
| | | | | 865 | | 870 | | | | 875 | | | | | 880 | |
| ctg | ttg | cga | ggg | aag | cga | gat | ggc | act | ttt | ctt | gtc | cgg | gag | agc | agt | 2688 |
| Leu | Leu | Arg | Gly | Lys | Arg | Asp | Gly | Thr | Phe | Leu | Val | Arg | Glu | Ser | Ser | |
| | | | | 885 | | | | | 890 | | | | | 895 | | |
| aaa | cag | ggc | tgc | tat | gcc | tgc | tct | gta | gtg | gtg | gac | ggc | gaa | gta | aag | 2736 |
| Lys | Gln | Gly | Cys | Tyr | Ala | Cys | Ser | Val | Val | Val | Asp | Gly | Glu | Val | Lys | |
| | | | | 900 | | | | 905 | | | | | 910 | | | |
| cat | tgt | gtc | ata | aac | aaa | aca | gca | act | ggc | tat | ggc | ttt | gcc | gag | ccc | 2784 |
| His | Cys | Val | Ile | Asn | Lys | Thr | Ala | Thr | Gly | Tyr | Gly | Phe | Ala | Glu | Pro | |
| | | | | 915 | | | 920 | | | | | 925 | | | | |
| tat | aac | ttg | tac | agc | tct | ctg | aaa | gaa | ctg | gtg | cta | cat | tac | caa | cac | 2832 |
| Tyr | Asn | Leu | Tyr | Ser | Ser | Leu | Lys | Glu | Leu | Val | Leu | His | Tyr | Gln | His | |
| | | | | 930 | | 935 | | | | | 940 | | | | | |
| acc | tcc | ctt | gtg | cag | cac | aac | gac | tcc | ctc | aat | gtc | aca | cta | gcc | tac | 2880 |
| Thr | Ser | Leu | Val | Gln | His | Asn | Asp | Ser | Leu | Asn | Val | Thr | Leu | Ala | Tyr | |
| | | | | 945 | | 950 | | | | 955 | | | | | 960 | |
| cca | gta | tat | gca | cag | cag | agg | cga | tga | | | | | | | | 2907 |
| Pro | Val | Tyr | Ala | Gln | Gln | Arg | Arg | | | | | | | | | |
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<210> 49

<211> 968

<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-p85alpha fusion

<400> 49

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| 1 | | | | 5 | | | | | 10 | | | | | 15 | | |
| Val | Glu | Leu | Asp | Gly | Asp | Val | Asn | Gly | His | Lys | Phe | Ser | Val | Ser | Gly | |
| | | | 20 | | | | | 25 | | | | | 30 | | | |
| Glu | Gly | Glu | Gly | Asp | Ala | Thr | Tyr | Gly | Lys | Leu | Thr | Leu | Lys | Phe | Ile | |
| | | | 35 | | | | 40 | | | | | 45 | | | | |
| Cys | Thr | Thr | Gly | Lys | Leu | Pro | Val | Pro | Trp | Pro | Thr | Leu | Val | Thr | Thr | |
| | 50 | | | | | 55 | | | | | 60 | | | | | |
| Leu | Thr | Tyr | Gly | Val | Gln | Cys | Phe | Ser | Arg | Tyr | Pro | Asp | His | Met | Lys | |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gln | His | Asp | Phe | Phe | Lys | Ser | Ala | Met | Pro | Glu | Gly | Tyr | Val | Gln | Glu |
| | | | 85 | | | | | | 90 | | | | | 95 | |
| Arg | Thr | Ile | Phe | Phe | Lys | Asp | Asp | Gly | Asn | Tyr | Lys | Thr | Arg | Ala | Glu |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Val | Lys | Phe | Glu | Gly | Asp | Thr | Leu | Val | Asn | Arg | Ile | Glu | Leu | Lys | Gly |
| | | 115 | | | | | 120 | | | | | 125 | | | |
| Ile | Asp | Phe | Lys | Glu | Asp | Gly | Asn | Ile | Leu | Gly | His | Lys | Leu | Glu | Tyr |
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| Asn | Tyr | Asn | Ser | His | Asn | Val | Tyr | Ile | Met | Ala | Asp | Lys | Gln | Lys | Asn |
| | 145 | | | | 150 | | | | | 155 | | | | | 160 |
| Gly | Ile | Lys | Val | Asn | Phe | Lys | Ile | Arg | His | Asn | Ile | Glu | Asp | Gly | Ser |
| | | | 165 | | | | | 170 | | | | | | 175 | |
| Val | Gln | Leu | Ala | Asp | His | Tyr | Gln | Gln | Asn | Thr | Pro | Ile | Gly | Asp | Gly |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Pro | Val | Leu | Leu | Pro | Asp | Asn | His | Tyr | Leu | Ser | Thr | Gln | Ser | Ala | Leu |
| | 195 | | | | | 200 | | | | | | 205 | | | |
| Ser | Lys | Asp | Pro | Asn | Glu | Lys | Arg | Asp | His | Met | Val | Leu | Leu | Glu | Phe |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Val | Thr | Ala | Ala | Gly | Ile | Thr | Leu | Gly | Met | Asp | Glu | Leu | Tyr | Lys | Ser |
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| Gly | Leu | Arg | Ser | Met | Ser | Ala | Glu | Gly | Tyr | Gln | Tyr | Arg | Ala | Leu | Tyr |
| | | | 245 | | | | | 250 | | | | | | 255 | |
| Asp | Tyr | Lys | Lys | Glu | Arg | Glu | Glu | Asp | Ile | Asp | Leu | His | Leu | Gly | Asp |
| | | | 260 | | | | | 265 | | | | | 270 | | |
| Ile | Leu | Thr | Val | Asn | Lys | Gly | Ser | Leu | Val | Ala | Leu | Gly | Phe | Ser | Asp |
| | 275 | | | | | | 280 | | | | | | 285 | | |
| Gly | Gln | Glu | Ala | Arg | Pro | Glu | Glu | Ile | Gly | Trp | Leu | Asn | Gly | Tyr | Asn |
| | 290 | | | | | 295 | | | | | 300 | | | | |
| Glu | Thr | Thr | Gly | Glu | Arg | Gly | Asp | Phe | Pro | Gly | Thr | Tyr | Val | Glu | Tyr |
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| Ile | Gly | Arg | Lys | Lys | Ile | Ser | Pro | Pro | Thr | Pro | Lys | Pro | Arg | Pro | Pro |
| | | | 325 | | | | | | 330 | | | | | 335 | |
| Arg | Pro | Leu | Pro | Val | Ala | Pro | Gly | Ser | Ser | Lys | Thr | Glu | Ala | Asp | Val |
| | | 340 | | | | | | 345 | | | | | 350 | | |
| Glu | Gln | Gln | Ala | Leu | Thr | Leu | Pro | Asp | Leu | Ala | Glu | Gln | Phe | Ala | Pro |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Pro | Asp | Ile | Ala | Pro | Pro | Leu | Leu | Ile | Lys | Leu | Val | Glu | Ala | Ile | Glu |
| | 370 | | | | | 375 | | | | | 380 | | | | |
| Lys | Lys | Gly | Leu | Glu | Cys | Ser | Thr | Leu | Tyr | Arg | Thr | Gln | Ser | Ser | Ser |
| | 385 | | | | 390 | | | | | 395 | | | | | 400 |
| Asn | Leu | Ala | Glu | Leu | Arg | Gln | Leu | Leu | Asp | Cys | Asp | Thr | Pro | Ser | Val |
| | | | 405 | | | | | | 410 | | | | | 415 | |
| Asp | Leu | Glu | Met | Ile | Asp | Val | His | Val | Leu | Ala | Asp | Ala | Phe | Lys | Arg |
| | | | 420 | | | | | 425 | | | | | 430 | | |
| Tyr | Leu | Leu | Asp | Leu | Pro | Asn | Pro | Val | Ile | Pro | Ala | Ala | Val | Tyr | Ser |
| | 435 | | | | | 440 | | | | | | 445 | | | |
| Glu | Met | Ile | Ser | Leu | Ala | Pro | Glu | Val | Gln | Ser | Ser | Glu | Glu | Tyr | Ile |
| | 450 | | | | | 455 | | | | | 460 | | | | |
| Gln | Leu | Leu | Lys | Lys | Leu | Ile | Arg | Ser | Pro | Ser | Ile | Pro | His | Gln | Tyr |
| | 465 | | | | 470 | | | | | 475 | | | | | 480 |
| Trp | Leu | Thr | Leu | Gln | Tyr | Leu | Leu | Lys | His | Phe | Phe | Lys | Leu | Ser | Gln |
| | | | 485 | | | | | | 490 | | | | | 495 | |
| Thr | Ser | Ser | Lys | Asn | Leu | Leu | Asn | Ala | Arg | Val | Leu | Ser | Glu | Ile | Phe |
| | | | 500 | | | | | 505 | | | | | 510 | | |
| Ser | Pro | Met | Leu | Phe | Arg | Phe | Ser | Ala | Ala | Ser | Ser | Asp | Asn | Thr | Glu |
| | | 515 | | | | | 520 | | | | | 525 | | | |
| Asn | Leu | Ile | Lys | Val | Ile | Glu | Ile | Leu | Ile | Ser | Thr | Glu | Trp | Asn | Glu |
| | 530 | | | | | 535 | | | | | 540 | | | | |
| Arg | Gln | Pro | Ala | Pro | Ala | Leu | Pro | Pro | Lys | Pro | Pro | Lys | Pro | Thr | Thr |
| | 545 | | | | 550 | | | | | 555 | | | | | 560 |
| Val | Ala | Asn | Asn | Gly | Met | Asn | Asn | Asn | Met | Ser | Leu | Gln | Asn | Ala | Glu |
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<223> EGFP-Smad2 fusion

<220>

<221> CDS

<222> (1)..(2157)

<400> 50

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| Met | Val | Ser | Lys | Gly | Glu | Glu | Leu | Phe | Thr | Gly | Val | Val | Pro | Ile | Leu | |
| 1 | | | 5 | | | | | | 10 | | | | 15 | | | |
| gtc | gag | ctg | gac | ggc | gac | gta | aac | ggc | cac | aag | ttc | agc | gtg | tcc | ggc | 96 |
| Val | Glu | Leu | Asp | Gly | Asp | Val | Asn | Gly | His | Lys | Phe | Ser | Val | Ser | Gly | |
| | | | 20 | | | | | 25 | | | | | 30 | | | |
| gag | ggc | gag | ggc | gat | gcc | acc | tac | ggc | aag | ctg | acc | ctg | aag | ttc | atc | 144 |
| Glu | Gly | Glu | Gly | Asp | Ala | Thr | Tyr | Gly | Lys | Leu | Thr | Leu | Lys | Phe | Ile | |
| | | | 35 | | | | 40 | | | | | | 45 | | | |
| tgc | acc | acc | ggc | aag | ctg | ccc | gtg | ccc | tgg | ccc | acc | ctc | gtg | acc | acc | 192 |
| Cys | Thr | Thr | Gly | Lys | Leu | Pro | Val | Pro | Trp | Pro | Thr | Leu | Val | Thr | Thr | |
| | 50 | | | | | 55 | | | | 60 | | | | | | |
| ctg | acc | tac | ggc | gtg | cag | tgc | ttc | agc | cgc | tac | ccc | gac | cac | atg | aag | 240 |
| Leu | Thr | Tyr | Gly | Val | Gln | Cys | Phe | Ser | Arg | Tyr | Pro | Asp | His | Met | Lys | |
| | 65 | | | | 70 | | | | 75 | | | | | 80 | | |
| cag | cac | gac | ttc | ttc | aag | tcc | gcc | atg | ccc | gaa | ggc | tac | gtc | cag | gag | 288 |
| Gln | His | Asp | Phe | Phe | Lys | Ser | Ala | Met | Pro | Glu | Gly | Tyr | Val | Gln | Glu | |
| | | | 85 | | | | | | 90 | | | | | 95 | | |
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| Arg | Thr | Ile | Phe | Phe | Lys | Asp | Asp | Gly | Asn | Tyr | Lys | Thr | Arg | Ala | Glu | |
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| atc | gac | ttc | aag | gag | gac | ggc | aac | atc | ctg | ggg | cac | aag | ctg | gag | tac | 432 |
| Ile | Asp | Phe | Lys | Glu | Asp | Gly | Asn | Ile | Leu | Gly | His | Lys | Leu | Glu | Tyr | |
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| aac | tac | aac | agc | cac | aac | gtc | tat | atc | atg | gcc | gac | aag | cag | aag | aac | 480 |
| Asn | Tyr | Asn | Ser | His | Asn | Val | Tyr | Ile | Met | Ala | Asp | Lys | Gln | Lys | Asn | |
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| ggc | atc | aag | gtg | aac | ttc | aag | atc | cgc | cac | aac | atc | gag | gac | ggc | agc | 528 |
| Gly | Ile | Lys | Val | Asn | Phe | Lys | Ile | Arg | His | Asn | Ile | Glu | Asp | Gly | Ser | |
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| gtg | cag | ctc | gcc | gac | cac | tac | cag | cag | aac | acc | ccc | atc | ggc | gac | ggc | 576 |
| Val | Gln | Leu | Ala | Asp | His | Tyr | Gln | Gln | Asn | Thr | Pro | Ile | Gly | Asp | Gly | |
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| ccc | gtg | ctg | ctg | ccc | gac | aac | cac | tac | ctg | agc | acc | cag | tcc | gcc | ctg | 624 |
| Pro | Val | Leu | Leu | Pro | Asp | Asn | His | Tyr | Leu | Ser | Thr | Gln | Ser | Ala | Leu | |
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| agc | aaa | gac | ccc | aac | gag | aag | cgc | gat | cac | atg | gtc | ctg | ctg | gag | ttc | 672 |
| Ser | Lys | Asp | Pro | Asn | Glu | Lys | Arg | Asp | His | Met | Val | Leu | Leu | Glu | Phe | |
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| Val | Thr | Ala | Ala | Gly | Ile | Thr | Leu | Gly | Met | Asp | Glu | Leu | Tyr | Lys | Ser | |
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| gga | ctc | aga | tct | cga | gct | caa | gct | tcg | aat | tcg | acc | atg | tcg | tcc | atc | 768 |
| Gly | Leu | Arg | Ser | Arg | Ala | Gln | Ala | Ser | Asn | Ser | Thr | Met | Ser | Ser | Ile | |
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| ttg | cca | ttc | acg | ccg | cca | gtt | gtg | aag | aga | ctg | ctg | gga | tgg | aag | aag | 816 |
| Leu | Pro | Phe | Thr | Pro | Pro | Val | Val | Lys | Arg | Leu | Leu | Gly | Trp | Lys | Lys | |
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| Ser | Ala | Gly | Gly | Ser | Gly | Gly | Ala | Gly | Gly | Gly | Glu | Gln | Asn | Gly | Gln | | |
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| gaa | gaa | aag | tgg | tgt | gag | aaa | gca | gtg | aaa | agt | ctg | gtg | aag | aag | cta | 912 | |
| Glu | Glu | Lys | Trp | Cys | Glu | Lys | Ala | Val | Lys | Ser | Leu | Val | Lys | Lys | Leu | | |
| | | 290 | | | | | 295 | | | | 300 | | | | | | |
| aag | aaa | aca | gga | cga | tta | gat | gag | ctt | gag | aaa | gcc | atc | acc | act | caa | 960 | |
| Lys | Lys | Thr | Gly | Arg | Leu | Asp | Glu | Leu | Glu | Lys | Ala | Ile | Thr | Thr | Gln | | |
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| aac | tgt | aat | act | aaa | tgt | gtt | acc | ata | cca | agc | act | tgc | tct | gaa | att | 1008 | |
| Asn | Cys | Asn | Thr | Lys | Cys | Val | Thr | Ile | Pro | Ser | Thr | Cys | Ser | Glu | Ile | | |
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| tgg | gga | ctg | agt | aca | cca | aat | acg | ata | gat | cag | tgg | gat | aca | aca | ggc | 1056 | |
| Trp | Gly | Leu | Ser | Thr | Pro | Asn | Thr | Ile | Asp | Gln | Trp | Asp | Thr | Thr | Gly | | |
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| ctt | tac | agc | ttc | tct | gaa | caa | acc | agg | tct | ctt | gat | ggt | cgt | ctc | cag | 1104 | |
| Leu | Tyr | Ser | Phe | Ser | Glu | Gln | Thr | Arg | Ser | Leu | Asp | Gly | Arg | Leu | Gln | | |
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| Val | Ser | His | Arg | Lys | Gly | Leu | Pro | His | Val | Ile | Tyr | Cys | Arg | Leu | Trp | | |
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| cgc | tgg | cct | gat | ctt | cac | agt | cat | cat | gaa | ctc | aag | gca | att | gaa | aac | 1200 | |
| Arg | Trp | Pro | Asp | Leu | His | Ser | His | His | Glu | Leu | Lys | Ala | Ile | Glu | Asn | | |
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| Cys | Glu | Tyr | Ala | Phe | Asn | Leu | Lys | Lys | Asp | Glu | Val | Cys | Val | Asn | Pro | | |
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| tac | cac | tat | cag | aga | gtt | gag | aca | cca | gtt | ttg | cct | cca | gta | tta | gtg | 1296 | |
| Tyr | His | Tyr | Gln | Arg | Val | Glu | Thr | Pro | Val | Leu | Pro | Pro | Val | Leu | Val | | |
| | | | | 420 | | | | | | 425 | | | | 430 | | | |
| ccc | cga | cac | acc | gag | atc | cta | aca | gaa | ctt | ccg | cct | ctg | gat | gac | tat | 1344 | |
| Pro | Arg | His | Thr | Glu | Ile | Leu | Thr | Glu | Leu | Pro | Pro | Leu | Asp | Asp | Tyr | | |
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| act | cac | tcc | att | cca | gaa | aac | act | aac | ttc | cca | gca | gga | att | gag | cca | 1392 | |
| Thr | His | Ser | Ile | Pro | Glu | Asn | Thr | Asn | Phe | Pro | Ala | Gly | Ile | Glu | Pro | | |
| | | | | 450 | | | | | | | 460 | | | | | | |
| cag | agt | aat | tat | att | cca | gaa | acg | cca | cct | cct | gga | tat | atc | agt | gaa | 1440 | |
| Gln | Ser | Asn | Tyr | Ile | Pro | Glu | Thr | Pro | Pro | Pro | Gly | Tyr | Ile | Ser | Glu | | |
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| gat | gga | gaa | aca | agt | gac | caa | cag | ttg | aat | caa | agt | atg | gac | aca | ggc | 1488 | |
| Asp | Gly | Glu | Thr | Ser | Asp | Gln | Gln | Leu | Asn | Gln | Ser | Met | Asp | Thr | Gly | | |
| | | | | | 485 | | | | | | 490 | | | | 495 | | |
| tct | cca | gca | gaa | cta | tct | cct | act | act | ctt | tcc | cct | gtt | aat | cat | agc | 1536 | |
| Ser | Pro | Ala | Glu | Leu | Ser | Pro | Thr | Thr | Leu | Ser | Pro | Val | Asn | His | Ser | | |
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| ttg | gat | tta | cag | cca | gtt | act | tac | tca | gaa | cct | gca | ttt | tgg | tgt | tca | 1584 | |
| Leu | Asp | Leu | Gln | Pro | Val | Thr | Tyr | Ser | Glu | Pro | Ala | Phe | Trp | Cys | Ser | | |
| | | | | | | | 520 | | | | | | | 525 | | | |
| ata | gca | tat | tat | gaa | tta | aat | cag | agg | gtt | gga | gaa | acc | ttc | cat | gca | 1632 | |
| Ile | Ala | Tyr | Tyr | Glu | Leu | Asn | Gln | Arg | Val | Gly | Glu | Thr | Phe | His | Ala | | |
| | | | | | | 535 | | | | | | | | 540 | | | |
| tca | cag | ccc | tca | ctc | act | gta | gat | ggc | ttt | aca | gac | cca | tca | aat | tca | 1680 | |
| Ser | Gln | Pro | Ser | Leu | Thr | Val | Asp | Gly | Phe | Thr | Asp | Pro | Ser | Asn | Ser | | |
| | | | | | | 550 | | | | | 555 | | | | 560 | | |
| gag | agg | ttc | tgc | tta | ggt | tta | ctc | tcc | aat | gtt | aac | cga | aat | gcc | acg | 1728 | |
| Glu | Arg | Phe | Cys | Leu | Gly | Leu | Leu | Ser | Asn | Val | Asn | Arg | Asn | Ala | Thr | | |
| | | | | | | 565 | | | | | 570 | | | | 575 | | |
| gta | gaa | atg | aca | aga | agg | cat | ata | gga | aga | gga | gtg | cgc | tta | tac | tac | 1776 | |
| Val | Glu | Met | Thr | Arg | Arg | His | Ile | Gly | Arg | Gly | Val | Arg | Leu | Tyr | Tyr | | |
| | | | | | | 580 | | | | | 585 | | | | 590 | | |
| ata | ggt | ggg | gaa | gtt | ttt | gct | gag | tgc | cta | agt | gat | agt | gca | atc | ttt | 1824 | |
| Ile | Gly | Gly | Glu | Val | Phe | Ala | Glu | Cys | Leu | Ser | Asp | Ser | Ala | Ile | Phe | | |
| | | | | | | 595 | | | | | | | | | 605 | | |
| gtg | cag | agc | ccc | aat | tgt | aat | cag | aga | tat | ggc | tgg | cac | cct | gca | aca | 1872 | |

| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|--|
| Val | Gln | Ser | Pro | Asn | Cys | Asn | Gln | Arg | Tyr | Gly | Trp | His | Pro | Ala | Thr | | |
| 610 | | | | | | 615 | | | | | 620 | | | | | | |
| gtg | tgt | aaa | att | cca | cca | ggc | tgt | aat | ctg | aag | atc | ttc | aac | aac | cag | 1920 | |
| Val | Cys | Lys | Ile | Pro | Pro | Gly | Cys | Asn | Leu | Lys | Ile | Phe | Asn | Asn | Gln | | |
| 625 | | | | | | 630 | | | | 635 | | | | | 640 | | |
| gaa | ttt | gct | gct | ctt | ctg | gct | cag | tct | gtt | aat | cag | ggt | ttt | gaa | gcc | 1968 | |
| Glu | Phe | Ala | Ala | Leu | Leu | Ala | Gln | Ser | Val | Asn | Gln | Gly | Phe | Glu | Ala | | |
| | | | | | | 645 | | | | 650 | | | | | 655 | | |
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| Val | Tyr | Gln | Leu | Thr | Arg | Met | Cys | Thr | Ile | Arg | Met | Ser | Phe | Val | Lys | | |
| | | | | | | 660 | | | | 665 | | | | | 670 | | |
| ggg | tgg | gga | gca | gaa | tac | cga | agg | cag | acg | gta | aca | agt | act | cct | tgc | 2064 | |
| Gly | Trp | Gly | Ala | Glu | Tyr | Arg | Arg | Gln | Thr | Val | Thr | Ser | Thr | Pro | Cys | | |
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| tgg | att | gaa | ctt | cat | ctg | aat | gga | cct | cta | cag | tgg | ttg | gac | aaa | gta | 2112 | |
| Trp | Ile | Glu | Leu | His | Leu | Asn | Gly | Pro | Leu | Gln | Trp | Leu | Asp | Lys | Val | | |
| | | | | | | 690 | | | | | 700 | | | | | | |
| tta | act | cag | atg | gga | tcc | cct | tca | gtg | cgt | tgc | tca | agc | atg | tca | taa | 2160 | |
| Leu | Thr | Gln | Met | Gly | Ser | Pro | Ser | Val | Arg | Cys | Ser | Ser | Met | Ser | | | |
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<220>

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| Met | Val | Ser | Lys | Gly | Glu | Glu | Leu | Phe | Thr | Gly | Val | Val | Pro | Ile | Leu | | |
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| Glu | Gly | Glu | Gly | Asp | Ala | Thr | Tyr | Gly | Lys | Leu | Thr | Leu | Lys | Phe | Ile | | |
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| Leu | Thr | Tyr | Gly | Val | Gln | Cys | Phe | Ser | Arg | Tyr | Pro | Asp | His | Met | Lys | | |
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| Gln | His | Asp | Phe | Phe | Lys | Ser | Ala | Met | Pro | Glu | Gly | Tyr | Val | Gln | Glu | | |
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| Arg | Thr | Ile | Phe | Phe | Lys | Asp | Asp | Gly | Asn | Tyr | Lys | Thr | Arg | Ala | Glu | | |
| | | | 100 | | | | | 105 | | | | | 110 | | | | |
| Val | Lys | Phe | Glu | Gly | Asp | Thr | Leu | Val | Asn | Arg | Ile | Glu | Leu | Lys | Gly | | |
| | | | 115 | | | | 120 | | | | | 125 | | | | | |
| Ile | Asp | Phe | Lys | Glu | Asp | Gly | Asn | Ile | Leu | Gly | His | Lys | Leu | Glu | Tyr | | |
| | | | 130 | | | 135 | | | | | 140 | | | | | | |
| Asn | Tyr | Asn | Ser | His | Asn | Val | Tyr | Ile | Met | Ala | Asp | Lys | Gln | Lys | Asn | | |
| 145 | | | | 150 | | | | | | 155 | | | | 160 | | | |
| Gly | Ile | Lys | Val | Asn | Phe | Lys | Ile | Arg | His | Asn | Ile | Glu | Asp | Gly | Ser | | |
| | | | 165 | | | | | | 170 | | | | | 175 | | | |
| Val | Gln | Leu | Ala | Asp | His | Tyr | Gln | Gln | Asn | Thr | Pro | Ile | Gly | Asp | Gly | | |
| | | | 180 | | | | | 185 | | | | | 190 | | | | |
| Pro | Val | Leu | Leu | Pro | Asp | Asn | His | Tyr | Leu | Ser | Thr | Gln | Ser | Ala | Leu | | |

| | | | | | |
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| Val | Thr | Ala | Ala | Gly | Ile |
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| Gly | Leu | Arg | Ser | Arg | Ala |
| | | | | | |
| Leu | Pro | Phe | Thr | Pro | Pro |
| | | | | | |
| Ser | Ala | Gly | Gly | Ser | Gly |
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| Glu | Glu | Lys | Trp | Cys | Glu |
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| Lys | Lys | Thr | Gly | Arg | Leu |
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| Asn | Cys | Asn | Thr | Lys | Cys |
| | | | | | |
| Trp | Gly | Leu | Ser | Thr | Pro |
| | | | | | |
| Leu | Tyr | Ser | Phe | Ser | Glu |
| | | | | | |
| Val | Ser | His | Arg | Lys | Gly |
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| Arg | Trp | Pro | Asp | Leu | His |
| 385 | | | | | |
| Cys | Glu | Tyr | Ala | Phe | Asn |
| | | | | | |
| Tyr | His | Tyr | Gln | Arg | Val |
| | | | | | |
| Pro | Arg | His | Thr | Glu | Ile |
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| Thr | His | Ser | Ile | Pro | Glu |
| 450 | | | | | |
| Gln | Ser | Asn | Tyr | Ile | Pro |
| 465 | | | | | |
| Asp | Gly | Glu | Thr | Ser | Asp |
| | | | | | |
| Ser | Pro | Ala | Glu | Leu | Ser |
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| Leu | Asp | Leu | Gln | Pro | Val |
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| Ile | Ala | Tyr | Tyr | Glu | Leu |
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| Ser | Gln | Pro | Ser | Leu | Thr |
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| Glu | Arg | Phe | Cys | Leu | Gly |
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| Val | Glu | Met | Thr | Arg | Arg |
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| Glu | Phe | Ala | Ala | Leu | Leu |
| | | | | | |
| Val | Tyr | Gln | Leu | Thr | Arg |
| | | | | | |
| Gly | Trp | Gly | Ala | Glu | Tyr |
| | | | | | |
| Trp | Ile | Glu | Leu | His | Leu |
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Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
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gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc 144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
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tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc 192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
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ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag 240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
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Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
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cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag 336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
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gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc 384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
115 120 125
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Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
130 135 140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac 480
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145 150 155 160
ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc 528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
165 170 175
gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc 576
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
180 185 190

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| agc | aaa | gac | ccc | aac | gag | aag | cgc | gat | cac | atg | gtc | ctg | ctg | gag | ttc | 672 |
| Ser | Lys | Asp | Pro | Asn | Glu | Lys | Arg | Asp | His | Met | Val | Leu | Leu | Glu | Phe | |
| | 210 | | | | | 215 | | | | | 220 | | | | | |
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| Val | Thr | Ala | Ala | Gly | Ile | Thr | Leu | Gly | Met | Asp | Glu | Leu | Tyr | Lys | Ser | |
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| gga | ctc | aga | tct | cga | gct | caa | gct | tcg | aat | tcg | aat | tca | acc | atg | gac | 768 |
| Gly | Leu | Arg | Ser | Arg | Ala | Gln | Ala | Ser | Asn | Ser | Asn | Ser | Thr | Met | Asp | |
| | | | | 245 | | | | | 250 | | | | | 255 | | |
| aat | atg | tct | att | acg | aat | aca | cca | aca | agt | aat | gat | gcc | tgt | ctg | agc | 816 |
| Asn | Met | Ser | Ile | Thr | Asn | Thr | Pro | Thr | Ser | Asn | Asp | Ala | Cys | Leu | Ser | |
| | | | 260 | | | | | 265 | | | | | 270 | | | |
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| Ile | Val | His | Ser | Leu | Met | Cys | His | Arg | Gln | Gly | Gly | Glu | Ser | Glu | Thr | |
| | 275 | | | | | 280 | | | | | | 285 | | | | |
| ttt | gca | aaa | aga | gca | att | gaa | agt | ttg | gta | aag | aag | ctg | aag | gag | aaa | 912 |
| Phe | Ala | Lys | Arg | Ala | Ile | Glu | Ser | Leu | Val | Lys | Lys | Leu | Lys | Glu | Lys | |
| | 290 | | | | | 295 | | | | 300 | | | | | | |
| aaa | gat | gaa | ttg | gat | tct | tta | ata | aca | gct | ata | act | aca | aat | gga | gct | 960 |
| Lys | Asp | Glu | Leu | Asp | Ser | Leu | Ile | Thr | Ala | Ile | Thr | Thr | Asn | Gly | Ala | |
| | 305 | | | | 310 | | | | 315 | | | | | 320 | | |
| cat | cct | agt | aaa | tgt | gtt | acc | ata | cag | aga | aca | ttg | gat | ggg | agg | ctt | 1008 |
| His | Pro | Ser | Lys | Cys | Val | Thr | Ile | Gln | Arg | Thr | Leu | Asp | Gly | Arg | Leu | |
| | | | 325 | | | | | 330 | | | | | 335 | | | |
| cag | gtg | gct | ggg | cgg | aaa | gga | ttt | cct | cat | gtg | atc | tat | gcc | cgt | ctc | 1056 |
| Gln | Val | Ala | Gly | Arg | Lys | Gly | Phe | Pro | His | Val | Ile | Tyr | Ala | Arg | Leu | |
| | | | 340 | | | | | 345 | | | | | 350 | | | |
| tgg | agg | tgg | cct | gat | ctt | cac | aaa | aat | gaa | cta | aaa | cat | gtt | aaa | tat | 1104 |
| Trp | Arg | Trp | Pro | Asp | Leu | His | Lys | Asn | Glu | Leu | Lys | His | Val | Lys | Tyr | |
| | 355 | | | | | 360 | | | | | | 365 | | | | |
| tgt | cag | tat | gcg | ttt | gac | tta | aaa | tgt | gat | agt | gtc | tgt | gtg | aat | cca | 1152 |
| Cys | Gln | Tyr | Ala | Phe | Asp | Leu | Lys | Cys | Asp | Ser | Val | Cys | Val | Asn | Pro | |
| | 370 | | | | 375 | | | | | | 380 | | | | | |
| tat | cac | tac | gaa | cga | gtt | gta | tca | cct | gga | att | gat | ctc | tca | gga | tta | 1200 |
| Tyr | His | Tyr | Glu | Arg | Val | Val | Ser | Pro | Gly | Ile | Asp | Leu | Ser | Gly | Leu | |
| | 385 | | | | 390 | | | | | 395 | | | | 400 | | |
| aca | ctg | cag | agt | aat | gct | cca | tca | agt | atg | atg | gtg | aag | gat | gaa | tat | 1248 |
| Thr | Leu | Gln | Ser | Asn | Ala | Pro | Ser | Ser | Met | Met | Val | Lys | Asp | Glu | Tyr | |
| | | | | 405 | | | | | 410 | | | | | 415 | | |
| gtg | cat | gac | ttt | gag | gga | cag | cca | tcg | ttg | tcc | act | gaa | gga | cat | tca | 1296 |
| Val | His | Asp | Phe | Glu | Gly | Gln | Pro | Ser | Leu | Ser | Thr | Glu | Gly | His | Ser | |
| | | | 420 | | | | | 425 | | | | | 430 | | | |
| att | caa | acc | atc | cag | cat | cca | cca | agt | aat | cgt | gca | tcg | aca | gag | aca | 1344 |
| Ile | Gln | Thr | Ile | Gln | His | Pro | Pro | Ser | Asn | Arg | Ala | Ser | Thr | Glu | Thr | |
| | 435 | | | | | 440 | | | | | | 445 | | | | |
| tac | agc | acc | cca | gct | ctg | tta | gcc | cca | tct | gag | tct | aat | gct | acc | agc | 1392 |
| Tyr | Ser | Thr | Pro | Ala | Leu | Leu | Ala | Pro | Ser | Glu | Ser | Asn | Ala | Thr | Ser | |
| | 450 | | | | | 455 | | | | | 460 | | | | | |
| act | gcc | aac | ttt | ccc | aac | att | cct | gtg | gct | tcc | aca | agt | cag | cct | gcc | 1440 |
| Thr | Ala | Asn | Phe | Pro | Asn | Ile | Pro | Val | Ala | Ser | Thr | Ser | Gln | Pro | Ala | |
| | 465 | | | | 470 | | | | | 475 | | | | 480 | | |
| agt | ata | ctg | ggg | ggc | agc | cat | agt | gaa | gga | ctg | ttg | cag | ata | gca | tca | 1488 |
| Ser | Ile | Leu | Gly | Gly | Ser | His | Ser | Glu | Gly | Leu | Leu | Gln | Ile | Ala | Ser | |
| | | | 485 | | | | | 490 | | | | | | 495 | | |
| ggg | cct | cag | cca | gga | cag | cag | cag | aat | gga | ttt | act | ggg | cag | cca | gct | 1536 |
| Gly | Pro | Gln | Pro | Gly | Gln | Gln | Gln | Asn | Gly | Phe | Thr | Gly | Gln | Pro | Ala | |
| | | | 500 | | | | | 505 | | | | | 510 | | | |
| act | tac | cat | cat | aac | agc | act | acc | acc | tgg | act | gga | agt | agg | act | gca | 1584 |
| Thr | Tyr | His | His | Asn | Ser | Thr | Thr | Thr | Trp | Thr | Gly | Ser | Arg | Thr | Ala | |
| | 515 | | | | | | 520 | | | | | 525 | | | | |

| | |
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| cca tac aca cct aat ttg cct cac cac caa aac ggc cat ctt cag cac | 1632 |
| Pro Tyr Thr Pro Asn Leu Pro His His Gln Asn Gly His Leu Gln His | |
| 530 535 540 | |
| cac ccg cct atg ccg ccc cat ccc gga cat tac tgg cct gtt cac aat | 1680 |
| His Pro Pro Met Pro Pro His Pro Gly His Tyr Trp Pro Val His Asn | |
| 545 550 555 560 | |
| gag ctt gca ttc cag cct ccc att tcc aat cat cct gct cct gag tat | 1728 |
| Glu Leu Ala Phe Gln Pro Pro Ile Ser Asn His Pro Ala Pro Glu Tyr | |
| 565 570 575 | |
| tgg tgt tcc att gct tac ttt gaa atg gat gtt cag gta gga gag aca | 1776 |
| Trp Cys Ser Ile Ala Tyr Phe Glu Met Asp Val Gln Val Gly Glu Thr | |
| 580 585 590 | |
| ttt aag gtt cct tca agc tgc cct att gtt act gtt gat gga tac gtg | 1824 |
| Phe Lys Val Pro Ser Ser Cys Pro Ile Val Thr Val Asp Gly Tyr Val | |
| 595 600 605 | |
| gac cct tct gga gga gat cgc ttt tgt ttg ggt caa ctc tcc aat gtc | 1872 |
| Asp Pro Ser Gly Gly Asp Arg Phe Cys Leu Gly Gln Leu Ser Asn Val | |
| 610 615 620 | |
| cac agg aca gaa gcc att gag aga gca agg ttg cac ata ggc aaa ggt | 1920 |
| His Arg Thr Glu Ala Ile Glu Arg Ala Arg Leu His Ile Gly Lys Gly | |
| 625 630 635 640 | |
| gtg cag ttg gaa tgt aaa ggt gaa ggt gat gtt tgg gtc agg tgc ctt | 1968 |
| Val Gln Leu Glu Cys Lys Gly Glu Gly Asp Val Trp Val Arg Cys Leu | |
| 645 650 655 | |
| agt gac cac gcg gtc ttt gta cag agt tac tac tta gac aga gaa gct | 2016 |
| Ser Asp His Ala Val Phe Val Gln Ser Tyr Tyr Leu Asp Arg Glu Ala | |
| 660 665 670 | |
| ggg cgt gca cct gga gat gct gtt cat aag atc tac cca agt gca tat | 2064 |
| Gly Arg Ala Pro Gly Asp Ala Val His Lys Ile Tyr Pro Ser Ala Tyr | |
| 675 680 685 | |
| ata aag gtc ttt gat ttg cgt cag tgt cat cga cag atg cag cag cag | 2112 |
| Ile Lys Val Phe Asp Leu Arg Gln Cys His Arg Gln Met Gln Gln Gln | |
| 690 695 700 | |
| gcg gct act gca caa gct gca gca gct gcc cag gca gcc gtg gca | 2160 |
| Ala Ala Thr Ala Gln Ala Ala Ala Ala Ala Gln Ala Ala Val Ala | |
| 705 710 715 720 | |
| gga aac atc cct ggc cca gga tca gta ggt gga ata gct cca gct atc | 2208 |
| Gly Asn Ile Pro Gly Pro Gly Ser Val Gly Gly Ile Ala Pro Ala Ile | |
| 725 730 735 | |
| agt ctg tca gct gct gct gga att ggt gtt gat gac ctt cgt cgc tta | 2256 |
| Ser Leu Ser Ala Ala Ala Gly Ile Gly Val Asp Asp Leu Arg Arg Leu | |
| 740 745 750 | |
| tgc ata ctc agg atg agt ttt gtg aaa ggc tgg gga ccg gat tac cca | 2304 |
| Cys Ile Leu Arg Met Ser Phe Val Lys Gly Trp Gly Pro Asp Tyr Pro | |
| 755 760 765 | |
| aga cag agc atc aaa gaa aca cct tgc tgg att gaa att cac tta cac | 2352 |
| Arg Gln Ser Ile Lys Glu Thr Pro Cys Trp Ile Glu Ile His Leu His | |
| 770 775 780 | |
| cgg gcc ctc cag ctc cta gac gaa gta ctt cat acc atg ccg att gca | 2400 |
| Arg Ala Leu Gln Leu Leu Asp Glu Val Leu His Thr Met Pro Ile Ala | |
| 785 790 795 800 | |
| gac cca caa cct tta gac tga | 2421 |
| Asp Pro Gln Pro Leu Asp | |
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20 25 30
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
35 40 45
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
50 55 60
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65 70 75 80
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
85 90 95
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
100 105 110
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
115 120 125
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
130 135 140
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145 150 155 160
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
165 170 175
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
180 185 190
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
195 200 205
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
210 215 220
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225 230 235 240
Gly Leu Arg Ser Arg Ala Gln Ala Ser Asn Ser Asn Ser Thr Met Asp
245 250 255
Asn Met Ser Ile Thr Asn Thr Pro Thr Ser Asn Asp Ala Cys Leu Ser
260 265 270
Ile Val His Ser Leu Met Cys His Arg Gln Gly Gly Glu Ser Glu Thr
275 280 285
Phe Ala Lys Arg Ala Ile Glu Ser Leu Val Lys Lys Leu Lys Glu Lys
290 295 300
Lys Asp Glu Leu Asp Ser Leu Ile Thr Ala Ile Thr Thr Asn Gly Ala
305 310 315 320
His Pro Ser Lys Cys Val Thr Ile Gln Arg Thr Leu Asp Gly Arg Leu
325 330 335
Gln Val Ala Gly Arg Lys Gly Phe Pro His Val Ile Tyr Ala Arg Leu
340 345 350
Trp Arg Trp Pro Asp Leu His Lys Asn Glu Leu Lys His Val Lys Tyr
355 360 365
Cys Gln Tyr Ala Phe Asp Leu Lys Cys Asp Ser Val Cys Val Asn Pro
370 375 380
Tyr His Tyr Glu Arg Val Val Ser Pro Gly Ile Asp Leu Ser Gly Leu
385 390 395 400
Thr Leu Gln Ser Asn Ala Pro Ser Ser Met Met Val Lys Asp Glu Tyr
405 410 415
Val His Asp Phe Glu Gly Gln Pro Ser Leu Ser Thr Glu Gly His Ser

| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|
| | | | 420 | | | | | 425 | | | | | 430 | | | | |
| Ile | Gln | Thr | Ile | Gln | His | Pro | Pro | Ser | Asn | Arg | Ala | Ser | Thr | Glu | Thr | | |
| | | 435 | | | | | 440 | | | | | 445 | | | | | |
| Tyr | Ser | Thr | Pro | Ala | Leu | Leu | Ala | Pro | Ser | Glu | Ser | Asn | Ala | Thr | Ser | | |
| | 450 | | | | | 455 | | | | | 460 | | | | | | |
| Thr | Ala | Asn | Phe | Pro | Asn | Ile | Pro | Val | Ala | Ser | Thr | Ser | Gln | Pro | Ala | | |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 | | |
| Ser | Ile | Leu | Gly | Gly | Ser | His | Ser | Glu | Gly | Leu | Leu | Gln | Ile | Ala | Ser | | |
| | | | 485 | | | | | | 490 | | | | | 495 | | | |
| Gly | Pro | Gln | Pro | Gly | Gln | Gln | Gln | Asn | Gly | Phe | Thr | Gly | Gln | Pro | Ala | | |
| | | 500 | | | | | 505 | | | | | | 510 | | | | |
| Thr | Tyr | His | His | Asn | Ser | Thr | Thr | Thr | Trp | Thr | Gly | Ser | Arg | Thr | Ala | | |
| | 515 | | | | | | 520 | | | | | 525 | | | | | |
| Pro | Tyr | Thr | Pro | Asn | Leu | Pro | His | His | Gln | Asn | Gly | His | Leu | Gln | His | | |
| | 530 | | | | | 535 | | | | | 540 | | | | | | |
| His | Pro | Pro | Met | Pro | Pro | His | Pro | Gly | His | Tyr | Trp | Pro | Val | His | Asn | | |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 | | |
| Glu | Leu | Ala | Phe | Gln | Pro | Pro | Ile | Ser | Asn | His | Pro | Ala | Pro | Glu | Tyr | | |
| | | | 565 | | | | | | 570 | | | | | 575 | | | |
| Trp | Cys | Ser | Ile | Ala | Tyr | Phe | Glu | Met | Asp | Val | Gln | Val | Gly | Glu | Thr | | |
| | | 580 | | | | | | 585 | | | | | 590 | | | | |
| Phe | Lys | Val | Pro | Ser | Ser | Cys | Pro | Ile | Val | Thr | Val | Asp | Gly | Tyr | Val | | |
| | 595 | | | | | | 600 | | | | | 605 | | | | | |
| Asp | Pro | Ser | Gly | Gly | Asp | Arg | Phe | Cys | Leu | Gly | Gln | Leu | Ser | Asn | Val | | |
| | 610 | | | | | 615 | | | | | 620 | | | | | | |
| His | Arg | Thr | Glu | Ala | Ile | Glu | Arg | Ala | Arg | Leu | His | Ile | Gly | Lys | Gly | | |
| 625 | | | | | 630 | | | | | 635 | | | | | 640 | | |
| Val | Gln | Leu | Glu | Cys | Lys | Gly | Glu | Gly | Asp | Val | Trp | Val | Arg | Cys | Leu | | |
| | | | 645 | | | | | 650 | | | | | | 655 | | | |
| Ser | Asp | His | Ala | Val | Phe | Val | Gln | Ser | Tyr | Tyr | Leu | Asp | Arg | Glu | Ala | | |
| | | 660 | | | | | | 665 | | | | | 670 | | | | |
| Gly | Arg | Ala | Pro | Gly | Asp | Ala | Val | His | Lys | Ile | Tyr | Pro | Ser | Ala | Tyr | | |
| | 675 | | | | | | 680 | | | | | 685 | | | | | |
| Ile | Lys | Val | Phe | Asp | Leu | Arg | Gln | Cys | His | Arg | Gln | Met | Gln | Gln | Gln | | |
| | 690 | | | | | 695 | | | | | 700 | | | | | | |
| Ala | Ala | Thr | Ala | Gln | Ala | Ala | Ala | Ala | Ala | Gln | Ala | Ala | Ala | Val | Ala | | |
| 705 | | | | | 710 | | | | | 715 | | | | | 720 | | |
| Gly | Asn | Ile | Pro | Gly | Pro | Gly | Ser | Val | Gly | Gly | Ile | Ala | Pro | Ala | Ile | | |
| | | | 725 | | | | | | 730 | | | | | 735 | | | |
| Ser | Leu | Ser | Ala | Ala | Ala | Gly | Ile | Gly | Val | Asp | Asp | Leu | Arg | Arg | Leu | | |
| | | 740 | | | | | | 745 | | | | | 750 | | | | |
| Cys | Ile | Leu | Arg | Met | Ser | Phe | Val | Lys | Gly | Trp | Gly | Pro | Asp | Tyr | Pro | | |
| | 755 | | | | | | 760 | | | | | 765 | | | | | |
| Arg | Gln | Ser | Ile | Lys | Glu | Thr | Pro | Cys | Trp | Ile | Glu | Ile | His | Leu | His | | |
| | 770 | | | | | 775 | | | | | 780 | | | | | | |
| Arg | Ala | Leu | Gln | Leu | Leu | Asp | Glu | Val | Leu | His | Thr | Met | Pro | Ile | Ala | | |
| 785 | | | | | 790 | | | | | 795 | | | | | 800 | | |
| Asp | Pro | Gln | Pro | Leu | Asp | | | | | | | | | | | | |
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<400> 54

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| Met | Val | Ser | Lys | Gly | Glu | Glu | Leu | Phe | Thr | Gly | Val | Val | Pro | Ile | Leu | |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | | |
| gtc | gag | ctg | gac | ggc | gac | gta | aac | ggc | cac | aag | ttc | agc | gtg | tcc | ggc | 96 |
| Val | Glu | Leu | Asp | Gly | Asp | Val | Asn | Gly | His | Lys | Phe | Ser | Val | Ser | Gly | |
| | | | 20 | | | | | 25 | | | | | 30 | | | |
| gag | ggc | gag | ggc | gat | gcc | acc | tac | ggc | aag | ctg | acc | ctg | aag | ttc | atc | 144 |
| Glu | Gly | Glu | Gly | Asp | Ala | Thr | Gly | Gly | Lys | Leu | Thr | Leu | Lys | Phe | Ile | |
| | | | 35 | | | | 40 | | | | | 45 | | | | |
| tgc | acc | acc | ggc | aag | ctg | ccc | gtg | ccc | tgg | ccc | acc | ctc | gtg | acc | acc | 192 |
| Cys | Thr | Thr | Gly | Lys | Leu | Pro | Val | Pro | Trp | Pro | Thr | Leu | Val | Thr | Thr | |
| | | | 50 | | | 55 | | | | | 60 | | | | | |
| ctg | acc | tac | ggc | gtg | cag | tgc | ttc | agc | cgc | tac | ccc | gac | cac | atg | aag | 240 |
| Leu | Thr | Tyr | Gly | Val | Gln | Cys | Phe | Ser | Arg | Tyr | Pro | Asp | His | Met | Lys | |
| 65 | | | | 70 | | | | | 75 | | | | | 80 | | |
| cag | cac | gac | ttc | ttc | aag | tcc | gcc | atg | ccc | gaa | ggc | tac | gtc | cag | gag | 288 |
| Gln | His | Asp | Phe | Phe | Lys | Ser | Ala | Met | Pro | Glu | Gly | Tyr | Val | Gln | Glu | |
| | | | 85 | | | | | | 90 | | | | | 95 | | |
| cgc | acc | atc | ttc | ttc | aag | gac | gac | ggc | aac | tac | aag | acc | cgc | gcc | gag | 336 |
| Arg | Thr | Ile | Phe | Phe | Lys | Asp | Asp | Gly | Asn | Tyr | Lys | Thr | Arg | Ala | Glu | |
| | | | 100 | | | | | 105 | | | | | 110 | | | |
| gtg | aag | ttc | gag | ggc | gac | acc | ctg | gtg | aac | cgc | atc | gag | ctg | aag | ggc | 384 |
| Val | Lys | Phe | Glu | Gly | Asp | Thr | Leu | Val | Asn | Arg | Ile | Glu | Leu | Lys | Gly | |
| | | | 115 | | | | 120 | | | | | 125 | | | | |
| atc | gac | ttc | aag | gag | gac | ggc | aac | atc | ctg | ggg | cac | aag | ctg | gag | tac | 432 |
| Ile | Asp | Phe | Lys | Glu | Asp | Gly | Asn | Ile | Leu | Gly | His | Lys | Leu | Glu | Tyr | |
| | | | 130 | | | 135 | | | | | 140 | | | | | |
| aac | tac | aac | agc | cac | aac | gtc | tat | atc | atg | gcc | gac | aag | cag | aag | aac | 480 |
| Asn | Tyr | Asn | Ser | His | Asn | Val | Tyr | Ile | Met | Ala | Asp | Lys | Gln | Lys | Asn | |
| 145 | | | | 150 | | | | | | 155 | | | | 160 | | |
| ggc | atc | aag | gtg | aac | ttc | aag | atc | cgc | cac | aac | atc | gag | gac | ggc | agc | 528 |
| Gly | Ile | Lys | Val | Asn | Phe | Lys | Ile | Arg | His | Asn | Ile | Glu | Asp | Gly | Ser | |
| | | | 165 | | | | | 170 | | | | | 175 | | | |
| gtg | cag | ctc | gcc | gac | cac | tac | cag | cag | aac | acc | ccc | atc | ggc | gac | ggc | 576 |
| Val | Gln | Leu | Ala | Asp | His | Tyr | Gln | Gln | Asn | Thr | Pro | Ile | Gly | Asp | Gly | |
| | | | 180 | | | | 185 | | | | | 190 | | | | |
| ccc | gtg | ctg | ctg | ccc | gac | aac | cac | tac | ctg | agc | acc | cag | tcc | gcc | ctg | 624 |
| Pro | Val | Leu | Leu | Pro | Asp | Asn | His | Tyr | Leu | Ser | Thr | Gln | Ser | Ala | Leu | |
| | | | 195 | | | 200 | | | | | | 205 | | | | |
| agc | aaa | gac | ccc | aac | gag | aag | cgc | gat | cac | atg | gtc | ctg | ctg | gag | ttc | 672 |
| Ser | Lys | Asp | Pro | Asn | Glu | Lys | Arg | Asp | His | Met | Val | Leu | Leu | Glu | Phe | |
| | | | 210 | | | 215 | | | | | 220 | | | | | |
| gtg | acc | gcc | gcc | ggg | atc | act | ctc | ggc | atg | gac | gag | ctg | tac | aag | tcc | 720 |
| Val | Thr | Ala | Ala | Gly | Ile | Thr | Leu | Gly | Met | Asp | Glu | Leu | Tyr | Lys | Ser | |
| 225 | | | | 230 | | | | | | 235 | | | | 240 | | |
| gga | ctc | aga | tct | acc | atg | gcg | ggc | tgg | atc | cag | gcc | cag | cag | ctg | cag | 768 |
| Gly | Leu | Arg | Ser | Thr | Met | Ala | Gly | Trp | Ile | Gln | Ala | Gln | Gln | Leu | Gln | |
| | | | 245 | | | | 250 | | | | | 255 | | | | |
| gga | gac | gcg | ctg | cgc | cag | atg | cag | gtg | ctg | tac | ggc | cag | cac | ttc | ccc | 816 |
| Gly | Asp | Ala | Leu | Arg | Gln | Met | Gln | Val | Leu | Tyr | Gly | Gln | His | Phe | Pro | |
| | | | 260 | | | | 265 | | | | | 270 | | | | |
| atc | gag | gtc | cgg | cac | tac | ttg | gcc | cag | tgg | att | gag | agc | cag | cca | tgg | 864 |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Ile | Glu | Val | Arg | His | Tyr | Leu | Ala | Gln | Trp | Ile | Glu | Ser | Gln | Pro | Trp | |
| | | 275 | | | | | 280 | | | | | 285 | | | | |
| gat | gcc | att | gac | ttg | gac | aat | ccc | cag | gac | aga | gcc | caa | gcc | acc | cag | 912 |
| Asp | Ala | Ile | Asp | Leu | Asp | Asn | Pro | Gln | Asp | Arg | Ala | Gln | Ala | Thr | Gln | |
| | | 290 | | | | | 295 | | | | 300 | | | | | |
| ctc | ctg | gag | ggc | ctg | gtg | cag | gag | ctg | cag | aag | aag | gcg | gag | cac | cag | 960 |
| Leu | Leu | Glu | Gly | Leu | Val | Gln | Glu | Leu | Gln | Lys | Lys | Ala | Glu | His | Gln | |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 | |
| gtg | ggg | gaa | gat | ggg | ttt | tta | ctg | aag | atc | aag | ctg | ggg | cac | tac | gcc | 1008 |
| Val | Gly | Glu | Asp | Gly | Phe | Leu | Leu | Lys | Ile | Lys | Leu | Gly | His | Tyr | Ala | |
| | | | | 325 | | | | | 330 | | | | | 335 | | |
| acg | cag | ctc | cag | aaa | aca | tat | gac | cgc | tgc | ccc | ctg | gag | ctg | gtc | cgc | 1056 |
| Thr | Gln | Leu | Gln | Lys | Thr | Tyr | Asp | Arg | Cys | Pro | Leu | Glu | Leu | Val | Arg | |
| | | | | 340 | | | | 345 | | | | | 350 | | | |
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| Cys | Ile | Arg | His | Ile | Leu | Tyr | Asn | Glu | Gln | Arg | Leu | Val | Arg | Glu | Ala | |
| | | 355 | | | | | 360 | | | | | 365 | | | | |
| aac | aat | tgc | agc | tct | ccg | gct | ggg | atc | ctg | gtt | gac | gcc | atg | tcc | cag | 1152 |
| Asn | Asn | Cys | Ser | Ser | Pro | Ala | Gly | Ile | Leu | Val | Asp | Ala | Met | Ser | Gln | |
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| aag | cac | ctt | cag | atc | aac | cag | aca | ttt | gag | gag | ctg | cga | ctg | gtc | acg | 1200 |
| Lys | His | Leu | Gln | Ile | Asn | Gln | Thr | Phe | Glu | Glu | Leu | Arg | Leu | Val | Thr | |
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| cag | gac | aca | gag | aat | gag | ctg | aag | aaa | ctg | cag | cag | act | cag | gag | tac | 1248 |
| Gln | Asp | Thr | Glu | Asn | Glu | Leu | Lys | Lys | Leu | Gln | Gln | Thr | Gln | Glu | Tyr | |
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| ttc | atc | atc | cag | tac | cag | gag | agc | ctg | agg | atc | caa | gct | cag | ttt | gcc | 1296 |
| Phe | Ile | Ile | Gln | Tyr | Gln | Glu | Ser | Leu | Arg | Ile | Gln | Ala | Gln | Phe | Ala | |
| | | | 420 | | | | | 425 | | | | | 430 | | | |
| cag | ctg | gcc | cag | ctg | agc | ccc | cag | gag | cgt | ctg | agc | cgg | gag | acg | gcc | 1344 |
| Gln | Leu | Ala | Gln | Leu | Ser | Pro | Gln | Glu | Arg | Leu | Ser | Arg | Glu | Thr | Ala | |
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| ctc | cag | cag | aag | cag | gtg | tct | ctg | gag | gcc | tgg | ttg | cag | cgt | gag | gca | 1392 |
| Leu | Gln | Gln | Lys | Gln | Val | Ser | Leu | Glu | Ala | Trp | Leu | Gln | Arg | Glu | Ala | |
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| cag | aca | ctg | cag | cag | tac | cgc | gtg | gag | ctg | gcc | gag | aag | cac | cag | aag | 1440 |
| Gln | Thr | Leu | Gln | Gln | Tyr | Arg | Val | Glu | Leu | Ala | Glu | Lys | His | Gln | Lys | |
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| acc | ctg | cag | ctg | ctg | cgg | aag | cag | cag | acc | atc | ctg | gat | gac | gag | | 1488 |
| Thr | Leu | Gln | Leu | Leu | Arg | Lys | Gln | Gln | Thr | Ile | Ile | Leu | Asp | Asp | Glu | |
| | | | | 485 | | | | | 490 | | | | | 495 | | |
| ctg | atc | cag | tgg | aag | cgg | cgg | cag | cag | ctg | gcc | ggg | aac | ggc | ggg | ccc | 1536 |
| Leu | Ile | Gln | Trp | Lys | Arg | Arg | Gln | Gln | Leu | Ala | Gly | Asn | Gly | Gly | Pro | |
| | | | 500 | | | | 505 | | | | | 510 | | | | |
| ccc | gag | ggc | agc | ctg | gac | gtg | cta | cag | tcc | tgg | tgt | gag | aag | ttg | gcc | 1584 |
| Pro | Glu | Gly | Ser | Leu | Asp | Val | Leu | Gln | Ser | Trp | Cys | Glu | Lys | Leu | Ala | |
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| gag | atc | atc | tgg | cag | aac | cgg | cag | cag | atc | cgc | agg | gct | gag | cac | ctc | 1632 |
| Glu | Ile | Ile | Trp | Gln | Asn | Arg | Gln | Gln | Ile | Arg | Arg | Ala | Glu | His | Leu | |
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| tgc | cag | cag | ctg | ccc | atc | ccc | ggc | cca | gtg | gag | gag | atg | ctg | gcc | gag | 1680 |
| Cys | Gln | Gln | Leu | Pro | Ile | Pro | Gly | Pro | Val | Glu | Glu | Met | Leu | Ala | Glu | |
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| Val | Asn | Ala | Thr | Ile | Thr | Asp | Ile | Ile | Ser | Ala | Leu | Val | Thr | Ser | Thr | |
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| ttc | atc | att | gag | aag | cag | cct | cct | cag | gtc | ctg | aag | acc | cag | acc | aag | 1776 |
| Phe | Ile | Ile | Glu | Lys | Gln | Pro | Pro | Gln | Val | Leu | Lys | Thr | Gln | Thr | Lys | |
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| Phe | Ala | Ala | Thr | Val | Arg | Leu | Leu | Val | Gly | Gly | Lys | Leu | Asn | Val | His | |
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| atg | aat | ccc | ccc | cag | gtg | aag | gcc | acc | atc | atc | agt | gag | cag | cag | gcc | 1872 |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Met | Asn | Pro | Pro | Gln | Val | Lys | Ala | Thr | Ile | Ile | Ser | Glu | Gln | Gln | Ala | |
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| aag | tct | ctg | ctt | aaa | aat | gag | aac | acc | cgc | aac | gag | tgc | agt | ggg | gag | 1920 |
| Lys | Ser | Leu | Leu | Lys | Asn | Glu | Asn | Thr | Arg | Asn | Glu | Cys | Ser | Gly | Glu | |
| 625 | | | | 630 | | | | | 635 | | | | | | 640 | |
| atc | ctg | aac | aac | tgc | tgc | gtg | atg | gag | tac | cac | caa | gcc | acg | ggc | acc | 1968 |
| Ile | Leu | Asn | Asn | Cys | Val | Met | Glu | Tyr | His | Gln | Ala | Thr | Gly | Thr | | |
| | | | | 645 | | | | 650 | | | | | | 655 | | |
| ctc | agt | gcc | cac | ttc | agg | aac | atg | tca | ctg | aag | agg | atc | aag | cgt | gct | 2016 |
| Leu | Ser | Ala | His | Phe | Arg | Asn | Met | Ser | Leu | Lys | Arg | Ile | Lys | Arg | Ala | |
| | | | | 660 | | | | 665 | | | | | | 670 | | |
| gac | cgg | cgg | ggg | gca | gag | tcc | gtg | aca | gag | gag | aag | ttc | aca | gtc | ctg | 2064 |
| Asp | Arg | Arg | Gly | Ala | Glu | Ser | Val | Thr | Glu | Glu | Lys | Phe | Thr | Val | Leu | |
| | | | | 675 | | | | 680 | | | | | | 685 | | |
| ttt | gag | tct | cag | ttc | agt | gtt | ggc | agc | aat | gag | ctt | gtg | ttc | cag | gtg | 2112 |
| Phe | Glu | Ser | Gln | Phe | Ser | Val | Gly | Ser | Asn | Glu | Leu | Val | Phe | Gln | Val | |
| | | | | 690 | | | | 695 | | | | | | 700 | | |
| aag | act | ctg | tcc | cta | cct | gtg | gtt | gtc | atc | gtc | cac | ggc | agc | cag | gac | 2160 |
| Lys | Thr | Leu | Ser | Leu | Pro | Val | Val | Val | Ile | Val | His | Gly | Ser | Gln | Asp | |
| 705 | | | | | 710 | | | | | | | | | | 720 | |
| cac | aat | gcc | acg | gct | act | gtg | ctg | tgg | gac | aat | gcc | ttt | gct | gag | ccg | 2208 |
| His | Asn | Ala | Thr | Ala | Thr | Val | Leu | Trp | Asp | Asn | Ala | Phe | Ala | Glu | Pro | |
| | | | | 725 | | | | 730 | | | | | | 735 | | |
| ggc | agg | gtg | cca | ttt | gcc | gtg | cct | gac | aaa | gtg | ctg | tgg | ccg | cag | ctg | 2256 |
| Gly | Arg | Val | Pro | Phe | Ala | Val | Pro | Asp | Lys | Val | Leu | Trp | Pro | Gln | Leu | |
| | | | | 740 | | | | 745 | | | | | | 750 | | |
| tgt | gag | gcg | ctc | aac | atg | aaa | ttc | aag | gcc | gaa | gtg | cag | agc | aac | cgg | 2304 |
| Cys | Glu | Ala | Leu | Asn | Met | Lys | Phe | Lys | Ala | Glu | Val | Gln | Ser | Asn | Arg | |
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| ggc | ctg | acc | aag | gag | aac | ctc | gtg | ttc | ctg | gcg | cag | aaa | ctg | ttc | aac | 2352 |
| Gly | Leu | Thr | Lys | Glu | Asn | Leu | Val | Phe | Leu | Ala | Gln | Lys | Leu | Phe | Asn | |
| | | | | 770 | | | | 775 | | | | | | 780 | | |
| aac | agc | agc | agc | cac | ctg | gag | gac | tac | agt | ggc | ctg | tcc | gtg | tcc | tgg | 2400 |
| Asn | Ser | Ser | Ser | His | Leu | Glu | Asp | Tyr | Ser | Gly | Leu | Ser | Val | Ser | Trp | |
| 785 | | | | | 790 | | | | | | | | | | 800 | |
| tcc | cag | ttc | aac | agg | gag | aac | ttg | ccg | ggc | tgg | aac | tac | acc | ttc | tgg | 2448 |
| Ser | Gln | Phe | Asn | Arg | Glu | Asn | Leu | Pro | Gly | Trp | Asn | Tyr | Thr | Phe | Trp | |
| | | | | 805 | | | | 810 | | | | | | 815 | | |
| cag | tgg | ttt | gac | ggg | gtg | atg | gag | gtg | ttg | aag | aag | cac | cac | aag | ccc | 2496 |
| Gln | Trp | Phe | Asp | Gly | Val | Met | Glu | Val | Leu | Lys | Lys | His | His | Lys | Pro | |
| | | | | 820 | | | | 825 | | | | | | 830 | | |
| cac | tgg | aat | gat | ggg | gcc | atc | cta | ggg | ttt | gtg | aat | aag | caa | cag | gcc | 2544 |
| His | Trp | Asn | Asp | Gly | Ala | Ile | Leu | Gly | Phe | Val | Asn | Lys | Gln | Gln | Ala | |
| | | | | 835 | | | | 840 | | | | | | 845 | | |
| cac | gac | ctg | ctc | atc | aac | aag | ccc | gac | ggg | acc | ttc | ttg | ttg | cgc | ttt | 2592 |
| His | Asp | Leu | Leu | Ile | Asn | Lys | Pro | Asp | Gly | Thr | Phe | Leu | Leu | Arg | Phe | |
| | | | | 850 | | | | 855 | | | | | | 860 | | |
| agt | gac | tca | gaa | atc | ggg | ggc | atc | acc | atc | gcc | tgg | aag | ttt | gac | tcc | 2640 |
| Ser | Asp | Ser | Glu | Ile | Gly | Gly | Ile | Thr | Ile | Ala | Trp | Lys | Phe | Asp | Ser | |
| 865 | | | | | 870 | | | | | | | | | | 880 | |
| ccg | gaa | cgc | aac | ctg | tgg | aac | ctg | aaa | cca | ttc | acc | acg | cgg | gat | ttc | 2688 |
| Pro | Glu | Arg | Asn | Leu | Trp | Asn | Leu | Lys | Pro | Phe | Thr | Thr | Arg | Asp | Phe | |
| | | | | 885 | | | | 890 | | | | | | 895 | | |
| tcc | atc | agg | tcc | ctg | gct | gac | cgg | ctg | ggg | gac | ctg | agc | tat | ctc | atc | 2736 |
| Ser | Ile | Arg | Ser | Leu | Ala | Asp | Arg | Leu | Gly | Asp | Leu | Ser | Tyr | Leu | Ile | |
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| tat | gtg | ttt | cct | gac | cgc | ccc | aag | gat | gag | gtc | ttc | tcc | aag | tac | tac | 2784 |
| Tyr | Val | Phe | Pro | Asp | Arg | Pro | Lys | Asp | Glu | Val | Phe | Ser | Lys | Tyr | Tyr | |
| | | | | 915 | | | | 920 | | | | | | 925 | | |
| act | cct | gtg | ctg | gct | aaa | gct | gtt | gat | gga | tat | gtg | aaa | cca | cag | atc | 2832 |
| Thr | Pro | Val | Leu | Ala | Lys | Ala | Val | Asp | Gly | Tyr | Val | Lys | Pro | Gln | Ile | |
| | | | | 930 | | | | 935 | | | | | | 940 | | |
| aag | caa | gtg | gtc | cct | gag | ttt | gtg | aat | gca | tct | gca | gat | gct | ggg | ggc | 2880 |

| | | | | | | | | | | | | | | | | | |
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| Lys | Gln | Val | Val | Pro | Glu | Phe | Val | Asn | Ala | Ser | Ala | Asp | Ala | Gly | Gly | | |
| 945 | | | | | 950 | | | | | 955 | | | | | 960 | | |
| agc | agc | gcc | acg | tac | atg | gac | cag | gcc | ccc | tcc | cca | gct | gtg | tgc | ccc | 2928 | |
| Ser | Ser | Ala | Thr | Tyr | Met | Asp | Gln | Ala | Pro | Ser | Pro | Ala | Val | Cys | Pro | | |
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| cag | gct | ccc | tat | aac | atg | tac | cca | cag | aac | cct | gac | cat | gta | ctc | gat | 2976 | |
| Gln | Ala | Pro | Tyr | Asn | Met | Tyr | Pro | Gln | Asn | Pro | Asp | His | Val | Leu | Asp | | |
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| cag | gat | gga | gaa | ttc | gac | ctg | gat | gag | acc | atg | gat | gtg | gcc | agg | cac | 3024 | |
| Gln | Asp | Gly | Glu | Phe | Asp | Leu | Asp | Glu | Thr | Met | Asp | Val | Ala | Arg | His | | |
| | | 995 | | | | | 1000 | | | | | 1005 | | | | | |
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| Val | Glu | Glu | Leu | Leu | Arg | Arg | Pro | Met | Asp | Ser | Leu | Asp | Ser | Arg | | | |
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| ctc | tcg | ccc | cct | gcc | ggt | ctt | ttc | acc | tct | gcc | aga | ggc | tcc | ctc | | 3114 | |
| Leu | Ser | Pro | Pro | Ala | Gly | Leu | Phe | Thr | Ser | Ala | Arg | Gly | Ser | Leu | | | |
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| Met | Val | Ser | Lys | Gly | Glu | Glu | Leu | Phe | Thr | Gly | Val | Val | Pro | Ile | Leu | | |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | | | |
| Val | Glu | Leu | Asp | Gly | Asp | Val | Asn | Gly | His | Lys | Phe | Ser | Val | Ser | Gly | | |
| | | | 20 | | | | | 25 | | | | | 30 | | | | |
| Glu | Gly | Glu | Gly | Asp | Ala | Thr | Tyr | Gly | Lys | Leu | Thr | Leu | Lys | Phe | Ile | | |
| | | 35 | | | | 40 | | | | | | 45 | | | | | |
| Cys | Thr | Thr | Gly | Lys | Leu | Pro | Val | Pro | Trp | Pro | Thr | Leu | Val | Thr | Thr | | |
| | 50 | | | | | 55 | | | | | 60 | | | | | | |
| Leu | Thr | Tyr | Gly | Val | Gln | Cys | Phe | Ser | Arg | Tyr | Pro | Asp | His | Met | Lys | | |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 | | |
| Gln | His | Asp | Phe | Phe | Lys | Ser | Ala | Met | Pro | Glu | Gly | Tyr | Val | Gln | Glu | | |
| | | | 85 | | | | | | 90 | | | | | 95 | | | |
| Arg | Thr | Ile | Phe | Phe | Lys | Asp | Asp | Gly | Asn | Tyr | Lys | Thr | Arg | Ala | Glu | | |
| | | | 100 | | | | | 105 | | | | | | 110 | | | |
| Val | Lys | Phe | Glu | Gly | Asp | Thr | Leu | Val | Asn | Arg | Ile | Glu | Leu | Lys | Gly | | |
| | | 115 | | | | | 120 | | | | | | 125 | | | | |
| Ile | Asp | Phe | Lys | Glu | Asp | Gly | Asn | Ile | Leu | Gly | His | Lys | Leu | Glu | Tyr | | |
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| Asn | Tyr | Asn | Ser | His | Asn | Val | Tyr | Ile | Met | Ala | Asp | Lys | Gln | Lys | Asn | | |
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| Gly | Ile | Lys | Val | Asn | Phe | Lys | Ile | Arg | His | Asn | Ile | Glu | Asp | Gly | Ser | | |
| | | | 165 | | | | | 170 | | | | | | 175 | | | |
| Val | Gln | Leu | Ala | Asp | His | Tyr | Gln | Gln | Asn | Thr | Pro | Ile | Gly | Asp | Gly | | |
| | | 180 | | | | | | 185 | | | | | 190 | | | | |
| Pro | Val | Leu | Leu | Pro | Asp | Asn | His | Tyr | Leu | Ser | Thr | Gln | Ser | Ala | Leu | | |
| | | 195 | | | | | 200 | | | | | | 205 | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ser | Lys | Asp | Pro | Asn | Glu | Lys | Arg | Asp | His | Met | Val | Leu | Leu | Glu | Phe |
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| Val | Thr | Ala | Ala | Gly | Ile | Thr | Leu | Gly | Met | Asp | Glu | Leu | Tyr | Lys | Ser |
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| Gly | Leu | Arg | Ser | Thr | Met | Ala | Gly | Trp | Ile | Gln | Ala | Gln | Gln | Leu | Gln |
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| Ile | Glu | Val | Arg | His | Tyr | Leu | Ala | Gln | Trp | Ile | Glu | Ser | Gln | Pro | Trp |
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| Asp | Ala | Ile | Asp | Leu | Asp | Asn | Pro | Gln | Asp | Arg | Ala | Gln | Ala | Thr | Gln |
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| Leu | Leu | Glu | Gly | Leu | Val | Gln | Glu | Leu | Gln | Lys | Lys | Ala | Glu | His | Gln |
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| Val | Gly | Glu | Asp | Gly | Phe | Leu | Leu | Lys | Ile | Lys | Leu | Gly | His | Tyr | Ala |
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| Cys | Ile | Arg | His | Ile | Leu | Tyr | Asn | Glu | Gln | Arg | Leu | Val | Arg | Glu | Ala |
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| Asn | Asn | Cys | Ser | Ser | Pro | Ala | Gly | Ile | Leu | Val | Asp | Ala | Met | Ser | Gln |
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| Lys | His | Leu | Gln | Ile | Asn | Gln | Thr | Phe | Glu | Glu | Leu | Arg | Leu | Val | Thr |
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| Gln | Asp | Thr | Glu | Asn | Glu | Leu | Lys | Lys | Leu | Gln | Gln | Thr | Gln | Glu | Tyr |
| | | | | 405 | | | | | 410 | | | | | 415 | |
| Phe | Ile | Ile | Gln | Tyr | Gln | Glu | Ser | Leu | Arg | Ile | Gln | Ala | Gln | Phe | Ala |
| | | | 420 | | | | | 425 | | | | | 430 | | |
| Gln | Leu | Ala | Gln | Leu | Ser | Pro | Gln | Glu | Arg | Leu | Ser | Arg | Glu | Thr | Ala |
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| Leu | Gln | Gln | Lys | Gln | Val | Ser | Leu | Glu | Ala | Trp | Leu | Gln | Arg | Glu | Ala |
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| Gln | Thr | Leu | Gln | Gln | Tyr | Arg | Val | Glu | Leu | Ala | Glu | Lys | His | Gln | Lys |
| 465 | | | | | 470 | | | | 475 | | | | | | 480 |
| Thr | Leu | Gln | Leu | Leu | Arg | Lys | Gln | Gln | Thr | Ile | Ile | Leu | Asp | Asp | Glu |
| | | | | 485 | | | | | 490 | | | | | 495 | |
| Leu | Ile | Gln | Trp | Lys | Arg | Arg | Gln | Gln | Leu | Ala | Gly | Asn | Gly | Gly | Pro |
| | | | 500 | | | | | 505 | | | | | 510 | | |
| Pro | Glu | Gly | Ser | Leu | Asp | Val | Leu | Gln | Ser | Trp | Cys | Glu | Lys | Leu | Ala |
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| Glu | Ile | Ile | Trp | Gln | Asn | Arg | Gln | Gln | Ile | Arg | Arg | Ala | Glu | His | Leu |
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| Val | Asn | Ala | Thr | Ile | Thr | Asp | Ile | Ile | Ser | Ala | Leu | Val | Thr | Ser | Thr |
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| Phe | Ala | Ala | Thr | Val | Arg | Leu | Leu | Val | Gly | Gly | Lys | Leu | Asn | Val | His |
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| Lys | Ser | Leu | Leu | Lys | Asn | Glu | Asn | Thr | Arg | Asn | Glu | Cys | Ser | Gly | Glu |
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| Ile | Leu | Asn | Asn | Cys | Cys | Val | Met | Glu | Tyr | His | Gln | Ala | Thr | Gly | Thr |
| | | | | 645 | | | | | 650 | | | | | 655 | |
| Leu | Ser | Ala | His | Phe | Arg | Asn | Met | Ser | Leu | Lys | Arg | Ile | Lys | Arg | Ala |
| | | | 660 | | | | | 665 | | | | | 670 | | |
| Asp | Arg | Arg | Gly | Ala | Glu | Ser | Val | Thr | Glu | Glu | Lys | Phe | Thr | Val | Leu |
| | 675 | | | | | | 680 | | | | | 685 | | | |
| Phe | Glu | Ser | Gln | Phe | Ser | Val | Gly | Ser | Asn | Glu | Leu | Val | Phe | Gln | Val |
| 690 | | | | | | 695 | | | | | 700 | | | | |
| Lys | Thr | Leu | Ser | Leu | Pro | Val | Val | Val | Ile | Val | His | Gly | Ser | Gln | Asp |

| | | | | | | | | | | | | | | |
|-----|------|-----|-----|-----|-----|------|-----|-----|-----|-----|------|------|-----|-----|
| 705 | | | | | 710 | | | | | 715 | | | | 720 |
| His | Asn | Ala | Thr | Ala | Thr | Val | Leu | Trp | Asp | Asn | Ala | Phe | Ala | Glu |
| | | | | 725 | | | | | 730 | | | | | 735 |
| Gly | Arg | Val | Pro | Phe | Ala | Val | Pro | Asp | Lys | Val | Leu | Trp | Pro | Gln |
| | | | 740 | | | | | 745 | | | | | 750 | |
| Cys | Glu | Ala | Leu | Asn | Met | Lys | Phe | Lys | Ala | Glu | Val | Gln | Ser | Asn |
| | | 755 | | | | 760 | | | | | | 765 | | |
| Gly | Leu | Thr | Lys | Glu | Asn | Leu | Val | Phe | Leu | Ala | Gln | Lys | Leu | Phe |
| | 770 | | | | | 775 | | | | | 780 | | | |
| Asn | Ser | Ser | Ser | His | Leu | Glu | Asp | Tyr | Ser | Gly | Leu | Ser | Val | Ser |
| 785 | | | | | 790 | | | | 795 | | | | | 800 |
| Ser | Gln | Phe | Asn | Arg | Glu | Asn | Leu | Pro | Gly | Trp | Asn | Tyr | Thr | Phe |
| | | | 805 | | | | | 810 | | | | | | 815 |
| Gln | Trp | Phe | Asp | Gly | Val | Met | Glu | Val | Leu | Lys | Lys | His | His | Lys |
| | | 820 | | | | | 825 | | | | | | 830 | |
| His | Trp | Asn | Asp | Gly | Ala | Ile | Leu | Gly | Phe | Val | Asn | Lys | Gln | Gln |
| | 835 | | | | | | 840 | | | | | 845 | | |
| His | Asp | Leu | Leu | Ile | Asn | Lys | Pro | Asp | Gly | Thr | Phe | Leu | Leu | Arg |
| | 850 | | | | | 855 | | | | | 860 | | | |
| Ser | Asp | Ser | Glu | Ile | Gly | Gly | Ile | Thr | Ile | Ala | Trp | Lys | Phe | Asp |
| 865 | | | | | 870 | | | | 875 | | | | | 880 |
| Pro | Glu | Arg | Asn | Leu | Trp | Asn | Leu | Lys | Pro | Phe | Thr | Thr | Arg | Asp |
| | | | 885 | | | | | 890 | | | | | | 895 |
| Ser | Ile | Arg | Ser | Leu | Ala | Asp | Arg | Leu | Gly | Asp | Leu | Ser | Tyr | Leu |
| | | | 900 | | | | | 905 | | | | | 910 | |
| Tyr | Val | Phe | Pro | Asp | Arg | Pro | Lys | Asp | Glu | Val | Phe | Ser | Lys | Tyr |
| | 915 | | | | | 920 | | | | | | 925 | | |
| Thr | Pro | Val | Leu | Ala | Lys | Ala | Val | Asp | Gly | Tyr | Val | Lys | Pro | Gln |
| | 930 | | | | | 935 | | | | | 940 | | | |
| Lys | Gln | Val | Val | Pro | Glu | Phe | Val | Asn | Ala | Ser | Ala | Asp | Ala | Gly |
| 945 | | | | | 950 | | | | 955 | | | | | 960 |
| Ser | Ser | Ala | Thr | Tyr | Met | Asp | Gln | Ala | Pro | Ser | Pro | Ala | Val | Cys |
| | | | 965 | | | | | 970 | | | | | | 975 |
| Gln | Ala | Pro | Tyr | Asn | Met | Tyr | Pro | Gln | Asn | Pro | Asp | His | Val | Leu |
| | | 980 | | | | | 985 | | | | | 990 | | |
| Gln | Asp | Gly | Glu | Phe | Asp | Leu | Asp | Glu | Thr | Met | Asp | Val | Ala | Arg |
| | 995 | | | | | 1000 | | | | | | 1005 | | |
| Val | Glu | Glu | Leu | Leu | Arg | Arg | Pro | Met | Asp | Ser | Leu | Asp | Ser | Arg |
| | 1010 | | | | | 1015 | | | | | 1020 | | | |
| Leu | Ser | Pro | Pro | Ala | Gly | Leu | Phe | Thr | Ser | Ala | Arg | Gly | Ser | Leu |
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<211> 1875

<212> DNA

<213> Artificial Sequence

<220>

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<221> CDS

<222> (1)..(1872)

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gga act gct ggg gtc gtc ccg gtg gtc ccc ggg gag gtg gag gtg gtg      96
Gly Thr Ala Gly Val Val Pro Val Val Pro Gly Glu Val Glu Val Val
                               20          25          30
aag ggg cag cca ttc gat gtg ggc cca cgc tac acg cag ctg cag tac      144
Lys Gly Gln Pro Phe Asp Val Gly Pro Arg Tyr Thr Gln Leu Gln Tyr
                               35          40          45
atc ggc gag ggc gcg tac ggc atg gtc agc tca gct tat gac cac gtg      192
Ile Gly Glu Gly Ala Tyr Gly Met Val Ser Ser Ala Tyr Asp His Val
                               50          55          60
cgc aag acc aga gtg gcc atc aag aag atc agc ccc ttt gag cat caa      240
Arg Lys Thr Arg Val Ala Ile Lys Lys Ile Ser Pro Phe Glu His Gln
65          70          75          80
acc tac tgt cag cgc acg ctg agg gag atc cag atc ttg ctg cga ttc      288
Thr Tyr Cys Gln Arg Thr Leu Arg Glu Ile Gln Ile Leu Leu Arg Phe
                               85          90          95
cgc cat gag aat gtt ata ggc atc cga gac atc ctc aga gcg ccc acc      336
Arg His Glu Asn Val Ile Gly Ile Arg Asp Ile Leu Arg Ala Pro Thr
                               100          105          110
ctg gaa gcc atg aga gat gtt tac att gtt cag gac ctc atg gag aca      384
Leu Glu Ala Met Arg Asp Val Tyr Ile Val Gln Asp Leu Met Glu Thr
                               115          120          125
gac ctg tac aag ctg ctt aaa agc cag cag ctg agc aat gac cac atc      432
Asp Leu Tyr Lys Leu Leu Lys Ser Gln Gln Leu Ser Asn Asp His Ile
130          135          140
tgc tac ttc ctc tac cag atc ctc cgg ggc ctc aag tat ata cac tca      480
Cys Tyr Phe Leu Tyr Gln Ile Leu Arg Gly Leu Lys Tyr Ile His Ser
145          150          155          160
gcc aat gtg ctg cac cgg gac ctg aag cct tcc aat ctg ctt atc aac      528
Ala Asn Val Leu His Arg Asp Leu Lys Pro Ser Asn Leu Leu Ile Asn
                               165          170          175
acc acc tgc gac ctt aag atc tgt gat ttt ggc ctg gcc cgg att gct      576
Thr Thr Cys Asp Leu Lys Ile Cys Asp Phe Gly Leu Ala Arg Ile Ala
                               180          185          190
gac cct gag cac gac cac act ggc ttt ctg acg gag tat gtg gcc aca      624
Asp Pro Glu His Asp His Thr Gly Phe Leu Thr Glu Tyr Val Ala Thr
                               195          200          205
cgc tgg tac cga gcc cca gag atc atg ctt aat tcc aag ggc tac acc      672
Arg Trp Tyr Arg Ala Pro Glu Ile Met Leu Asn Ser Lys Gly Tyr Thr
210          215          220
aaa tcc atc gac atc tgg tct gtg ggc tgc att ctg gct gag atg ctc      720
Lys Ser Ile Asp Ile Trp Ser Val Gly Cys Ile Leu Ala Glu Met Leu
225          230          235          240
tcc aac cgg ccc atc ttc ccc ggc aag cac tac ctg gac cag ctc aac      768
Ser Asn Arg Pro Ile Phe Pro Gly Lys His Tyr Leu Asp Gln Leu Asn
                               245          250          255
cac att cta ggt atc ttg ggt tcc cca tcc cag gag gac ctt aat tgc      816
His Ile Leu Gly Ile Leu Gly Ser Pro Ser Gln Glu Asp Leu Asn Cys
                               260          265          270
atc att aac atg aag gcc cga aac tac ctg cag tct ctg ccc tcg aaa      864
Ile Ile Asn Met Lys Ala Arg Asn Tyr Leu Gln Ser Leu Pro Ser Lys
275          280          285
acc aag gtg gct tgg gcc aag ctc ttt cct aaa tct gac tcc aaa gct      912
Thr Lys Val Ala Trp Ala Lys Leu Phe Pro Lys Ser Asp Ser Lys Ala
290          295          300
ctt gac ctg ctg gac cgg atg tta acc ttc aac cca aac aag cgc atc      960

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| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Leu | Asp | Leu | Leu | Asp | Arg | Met | Leu | Thr | Phe | Asn | Pro | Asn | Lys | Arg | Ile | |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 | |
| aca | gta | gag | gaa | gcg | ctg | gct | cac | cct | tac | ctg | gaa | cag | tac | tac | gat | 1008 |
| Thr | Val | Glu | Glu | Ala | Leu | Ala | His | Pro | Tyr | Leu | Glu | Gln | Tyr | Tyr | Asp | |
| | | | | 325 | | | | | 330 | | | | | | 335 | |
| ccg | aca | gat | gag | cca | gtg | gcc | gag | gag | cca | ttc | acc | ttc | gac | atg | gag | 1056 |
| Pro | Thr | Asp | | Pro | Val | Ala | Glu | Glu | Pro | Phe | Thr | Phe | Asp | Met | Glu | |
| | | | | 340 | | | | | 345 | | | | | | 350 | |
| ctg | gat | gac | ctc | ccc | aag | gag | cgg | ctg | aag | gag | ttg | atc | ttc | cag | gag | 1104 |
| Leu | Asp | Asp | Leu | Pro | Lys | Glu | Arg | Leu | Lys | Glu | Leu | Ile | Phe | Gln | Glu | |
| | | | | 355 | | | | | 360 | | | | | | 365 | |
| aca | gcc | cgc | ttc | cag | cca | ggg | gcg | cca | gag | ggc | ccc | ggg | cgc | gcc | atg | 1152 |
| Thr | Ala | Arg | Phe | Gln | Pro | Gly | Ala | Pro | Glu | Gly | Pro | Gly | Arg | Ala | Met | |
| | | | | 370 | | | | | | | | | | | 380 | |
| agt | aaa | gga | gaa | gaa | ctt | ttc | act | gga | gtt | gtc | cca | att | ctt | gtt | gaa | 1200 |
| Ser | Lys | Gly | Glu | Glu | Leu | Phe | Thr | Gly | Val | Val | Pro | Ile | Leu | Val | Glu | |
| 385 | | | | | 390 | | | | | | | | | | 400 | |
| tta | gat | ggc | gat | gtt | aat | ggg | caa | aaa | ttc | tct | gtt | agt | gga | gag | ggt | 1248 |
| Leu | Asp | Gly | Asp | Val | Asn | Gly | Gln | Lys | Phe | Ser | Val | Ser | Gly | Glu | Gly | |
| | | | | 405 | | | | | | | | | | | 415 | |
| gaa | ggt | gat | gca | aca | tac | gga | aaa | ctt | acc | ctt | aaa | ttt | att | tgc | act | 1296 |
| Glu | Gly | Asp | Ala | Thr | Tyr | Gly | Lys | Leu | Thr | Leu | Lys | Phe | Ile | Cys | Thr | |
| | | | | 420 | | | | | | | | | | | 430 | |
| act | ggg | aag | cta | cct | gtt | cca | tgg | cca | acg | ctt | gtc | act | act | ctc | act | 1344 |
| Thr | Gly | Lys | Leu | Pro | Val | Pro | Trp | Pro | Thr | Leu | Val | Thr | Thr | Leu | Thr | |
| | | | | 435 | | | | | | | | | | | 445 | |
| tat | ggt | gtt | caa | tgc | ttt | tct | aga | tac | cca | gat | cat | atg | aaa | cag | cat | 1392 |
| Tyr | Gly | Val | Gln | Cys | Phe | Ser | Arg | Tyr | Pro | Asp | His | Met | Lys | Gln | His | |
| | | | | 450 | | | | | | | | | | | 460 | |
| gac | ttt | ttc | aag | agt | gcc | atg | ccc | gaa | ggt | tat | gta | cag | gaa | aga | act | 1440 |
| Asp | Phe | Phe | Lys | Ser | Ala | Met | Pro | Glu | Gly | Tyr | Val | Gln | Glu | Arg | Thr | |
| 465 | | | | | 470 | | | | | | | | | | 480 | |
| ata | ttt | tac | aaa | gat | gac | ggg | aac | tac | aag | aca | cgt | gct | gaa | gtc | aag | 1488 |
| Ile | Phe | Tyr | Lys | Asp | Asp | Gly | Asn | Tyr | Lys | Thr | Arg | Ala | Glu | Val | Lys | |
| | | | | 485 | | | | | | | | | | | 495 | |
| ttt | gaa | ggt | gat | acc | ctt | gtt | aat | aga | atc | gag | tta | aaa | ggt | att | gat | 1536 |
| Phe | Glu | Gly | Asp | Thr | Leu | Val | Asn | Arg | Ile | Glu | Leu | Lys | Gly | Ile | Asp | |
| | | | | 500 | | | | | | | | | | | 510 | |
| ttt | aaa | gaa | gat | gga | aac | att | ctt | gga | cac | aaa | atg | gaa | tac | aat | tat | 1584 |
| Phe | Lys | Glu | Asp | Gly | Asn | Ile | Leu | Gly | His | Lys | Met | Glu | Tyr | Asn | Tyr | |
| | | | | 515 | | | | | | | | | | | 525 | |
| aac | tca | cat | aat | gta | tac | atc | atg | gca | gac | aaa | cca | aag | aat | ggc | atc | 1632 |
| Asn | Ser | His | Asn | Val | Tyr | Ile | Met | Ala | Asp | Lys | Pro | Lys | Asn | Gly | Ile | |
| | | | | 530 | | | | | | | | | | | 540 | |
| aaa | gtt | aac | ttc | aaa | att | aga | cac | aac | att | aaa | gat | gga | agc | gtt | caa | 1680 |
| Lys | Val | Asn | Phe | Lys | Ile | Arg | His | Asn | Ile | Lys | Asp | Gly | Ser | Val | Gln | |
| 545 | | | | | 550 | | | | | | | | | | 560 | |
| tta | gca | gac | cat | tat | caa | caa | aat | act | cca | att | ggc | gat | ggc | cct | gtc | 1728 |
| Leu | Ala | Asp | His | Tyr | Gln | Gln | Asn | Thr | Pro | Ile | Gly | Asp | Gly | Pro | Val | |
| | | | | 565 | | | | | | | | | | | 575 | |
| ctt | tta | cca | gac | aac | cat | tac | ctg | tcc | acg | caa | tct | gcc | ctt | tcc | aaa | 1776 |
| Leu | Leu | Pro | Asp | Asn | His | Tyr | Leu | Ser | Thr | Gln | Ser | Ala | Leu | Ser | Lys | |
| | | | | 580 | | | | | | | | | | | 590 | |
| gat | ccc | aac | gaa | aag | aga | gat | cac | atg | atc | ctt | ctt | gag | ttt | gta | aca | 1824 |
| Asp | Pro | Asn | Glu | Lys | Arg | Asp | His | Met | Ile | Leu | Leu | Glu | Phe | Val | Thr | |
| | | | | 595 | | | | | | | | | | | 605 | |
| gct | gct | ggg | att | aca | cat | ggc | atg | gat | gaa | cta | tac | aaa | cct | cag | gag | 1872 |
| Ala | Ala | Gly | Ile | Thr | His | Gly | Met | Asp | Glu | Leu | Tyr | Lys | Pro | Gln | Glu | |
| | | | | 610 | | | | | | | | | | | 620 | |
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<211> 624

<212> PRT

<213> Artificial Sequence

<220>

<223> mERK1-F64L-S65T-GFP fusion

<400> 57

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ala | Ala | Ala | Ala | Ala | Ala | Pro | Gly | Gly | Gly | Gly | Gly | Glu | Pro | Arg |
| 1 | | | 5 | | | | | | 10 | | | | | 15 | |
| Gly | Thr | Ala | Gly | Val | Val | Pro | Val | Val | Pro | Gly | Glu | Val | Glu | Val | Val |
| | | 20 | | | | | | 25 | | | | | 30 | | |
| Lys | Gly | Gln | Pro | Phe | Asp | Val | Gly | Pro | Arg | Tyr | Thr | Gln | Leu | Gln | Tyr |
| | | 35 | | | | | 40 | | | | | 45 | | | |
| Ile | Gly | Glu | Gly | Ala | Tyr | Gly | Met | Val | Ser | Ser | Ala | Tyr | Asp | His | Val |
| | 50 | | | | | 55 | | | | | 60 | | | | |
| Arg | Lys | Thr | Arg | Val | Ala | Ile | Lys | Lys | Ile | Ser | Pro | Phe | Glu | His | Gln |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 |
| Thr | Tyr | Cys | Gln | Arg | Thr | Leu | Arg | Glu | Ile | Gln | Ile | Leu | Leu | Arg | Phe |
| | | | 85 | | | | | 90 | | | | | | 95 | |
| Arg | His | Glu | Asn | Val | Ile | Gly | Ile | Arg | Asp | Ile | Leu | Arg | Ala | Pro | Thr |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Leu | Glu | Ala | Met | Arg | Asp | Val | Tyr | Ile | Val | Gln | Asp | Leu | Met | Glu | Thr |
| | | 115 | | | | | 120 | | | | | 125 | | | |
| Asp | Leu | Tyr | Lys | Leu | Leu | Lys | Ser | Gln | Gln | Leu | Ser | Asn | Asp | His | Ile |
| | 130 | | | | | 135 | | | | | 140 | | | | |
| Cys | Tyr | Phe | Leu | Tyr | Gln | Ile | Leu | Arg | Gly | Leu | Lys | Tyr | Ile | His | Ser |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 |
| Ala | Asn | Val | Leu | His | Arg | Asp | Leu | Lys | Pro | Ser | Asn | Leu | Leu | Ile | Asn |
| | | | 165 | | | | | | 170 | | | | | 175 | |
| Thr | Thr | Cys | Asp | Leu | Lys | Ile | Cys | Asp | Phe | Gly | Leu | Ala | Arg | Ile | Ala |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Asp | Pro | Glu | His | Asp | His | Thr | Gly | Phe | Leu | Thr | Glu | Tyr | Val | Ala | Thr |
| | | 195 | | | | | 200 | | | | | 205 | | | |
| Arg | Trp | Tyr | Arg | Ala | Pro | Glu | Ile | Met | Leu | Asn | Ser | Lys | Gly | Tyr | Thr |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Lys | Ser | Ile | Asp | Ile | Trp | Ser | Val | Gly | Cys | Ile | Leu | Ala | Glu | Met | Leu |
| 225 | | | | 230 | | | | | 235 | | | | | | 240 |
| Ser | Asn | Arg | Pro | Ile | Phe | Pro | Gly | Lys | His | Tyr | Leu | Asp | Gln | Leu | Asn |
| | | | 245 | | | | | | 250 | | | | | 255 | |
| His | Ile | Leu | Gly | Ile | Leu | Gly | Ser | Pro | Ser | Gln | Glu | Asp | Leu | Asn | Cys |
| | | 260 | | | | | 265 | | | | | | 270 | | |
| Ile | Ile | Asn | Met | Lys | Ala | Arg | Asn | Tyr | Leu | Gln | Ser | Leu | Pro | Ser | Lys |
| | | 275 | | | | | 280 | | | | | 285 | | | |
| Thr | Lys | Val | Ala | Trp | Ala | Lys | Leu | Phe | Pro | Lys | Ser | Asp | Ser | Lys | Ala |
| | 290 | | | | | 295 | | | | | 300 | | | | |
| Leu | Asp | Leu | Leu | Asp | Arg | Met | Leu | Thr | Phe | Asn | Pro | Asn | Lys | Arg | Ile |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Thr | Val | Glu | Glu | Ala | Leu | Ala | His | Pro | Tyr | Leu | Glu | Gln | Tyr | Tyr | Asp |
| | | | 325 | | | | | | 330 | | | | | 335 | |
| Pro | Thr | Asp | Glu | Pro | Val | Ala | Glu | Glu | Pro | Phe | Thr | Phe | Asp | Met | Glu |
| | | | 340 | | | | | 345 | | | | | 350 | | |
| Leu | Asp | Asp | Leu | Pro | Lys | Glu | Arg | Leu | Lys | Glu | Leu | Ile | Phe | Gln | Glu |
| | | 355 | | | | | 360 | | | | | 365 | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Ala | Arg | Phe | Gln | Pro | Gly | Ala | Pro | Glu | Gly | Pro | Gly | Arg | Ala | Met |
| 370 | | | | | | 375 | | | | | 380 | | | | |
| Ser | Lys | Gly | Glu | Glu | Leu | Phe | Thr | Gly | Val | Val | Pro | Ile | Leu | Val | Glu |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Leu | Asp | Gly | Asp | Val | Asn | Gly | Gln | Lys | Phe | Ser | Val | Ser | Gly | Glu | Gly |
| | | | | 405 | | | | | 410 | | | | | 415 | |
| Glu | Gly | Asp | Ala | Thr | Tyr | Gly | Lys | Leu | Thr | Leu | Lys | Phe | Ile | Cys | Thr |
| | | | 420 | | | | | 425 | | | | | 430 | | |
| Thr | Gly | Lys | Leu | Pro | Val | Pro | Trp | Pro | Thr | Leu | Val | Thr | Thr | Leu | Thr |
| | | 435 | | | | | 440 | | | | | 445 | | | |
| Tyr | Gly | Val | Gln | Cys | Phe | Ser | Arg | Tyr | Pro | Asp | His | Met | Lys | Gln | His |
| | 450 | | | | | 455 | | | | | 460 | | | | |
| Asp | Phe | Phe | Lys | Ser | Ala | Met | Pro | Glu | Gly | Tyr | Val | Gln | Glu | Arg | Thr |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 |
| Ile | Phe | Tyr | Lys | Asp | Asp | Gly | Asn | Tyr | Lys | Thr | Arg | Ala | Glu | Val | Lys |
| | | | 485 | | | | | | 490 | | | | | 495 | |
| Phe | Glu | Gly | Asp | Thr | Leu | Val | Asn | Arg | Ile | Glu | Leu | Lys | Gly | Ile | Asp |
| | | | 500 | | | | | 505 | | | | | 510 | | |
| Phe | Lys | Glu | Asp | Gly | Asn | Ile | Leu | Gly | His | Lys | Met | Glu | Tyr | Asn | Tyr |
| | | 515 | | | | | 520 | | | | | 525 | | | |
| Asn | Ser | His | Asn | Val | Tyr | Ile | Met | Ala | Asp | Lys | Pro | Lys | Asn | Gly | Ile |
| | 530 | | | | | 535 | | | | | 540 | | | | |
| Lys | Val | Asn | Phe | Lys | Ile | Arg | His | Asn | Ile | Lys | Asp | Gly | Ser | Val | Gln |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 |
| Leu | Ala | Asp | His | Tyr | Gln | Gln | Asn | Thr | Pro | Ile | Gly | Asp | Gly | Pro | Val |
| | | | 565 | | | | | | 570 | | | | | 575 | |
| Leu | Leu | Pro | Asp | Asn | His | Tyr | Leu | Ser | Thr | Gln | Ser | Ala | Leu | Ser | Lys |
| | | | 580 | | | | | 585 | | | | | 590 | | |
| Asp | Pro | Asn | Glu | Lys | Arg | Asp | His | Met | Ile | Leu | Leu | Glu | Phe | Val | Thr |
| | | 595 | | | | | 600 | | | | | 605 | | | |
| Ala | Ala | Gly | Ile | Thr | His | Gly | Met | Asp | Glu | Leu | Tyr | Lys | Pro | Gln | Glu |
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<211> 1815

<212> DNA

<213> Artificial Sequence

<220>

<223> Erk2-EGFP fusion

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<222> (1)..(1812)

<400> 58

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| Met | Ala | Ala | Ala | Ala | Ala | Ala | Gly | Pro | Glu | Met | Val | Arg | Gly | Gln | Val | |
| 1 | | | 5 | | | | | 10 | | | | | 15 | | | |
| ttc | gac | gtg | ggg | ccg | cgc | tac | act | aat | ctc | tcg | tac | atc | gga | gaa | ggc | 96 |
| Phe | Asp | Val | Gly | Pro | Arg | Tyr | Thr | Asn | Leu | Ser | Tyr | Ile | Gly | Glu | Gly | |
| | | | 20 | | | | | 25 | | | | | 30 | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| gcc | tac | ggc | atg | gtt | tgt | tct | gct | tat | gat | aat | ctc | aac | aaa | gtt | cga | 144 |
| Ala | Tyr | Gly | Met | Val | Cys | Ser | Ala | Tyr | Asp | Asn | Leu | Asn | Lys | Val | Arg | |
| | | 35 | | | | | 40 | | | | | 45 | | | | |
| gtt | gct | atc | aag | aaa | atc | agt | cct | ttt | gag | cac | cag | acc | tac | tgt | cag | 192 |
| Val | Ala | Ile | Lys | Lys | Ile | Ser | Pro | Phe | Glu | His | Gln | Thr | Tyr | Cys | Gln | |
| | | 50 | | | | | 55 | | | | 60 | | | | | |
| aga | acc | ctg | aga | gag | ata | aaa | atc | cta | ctg | cgc | ttc | aga | cat | gag | aac | 240 |
| Arg | Thr | Leu | Arg | Glu | Ile | Lys | Ile | Leu | Leu | Arg | Phe | Arg | His | Glu | Asn | |
| | | 65 | | | | 70 | | | | 75 | | | | | 80 | |
| atc | atc | ggc | atc | aat | gac | atc | atc | cgg | gca | cca | acc | att | gag | cag | atg | 288 |
| Ile | Ile | Gly | Ile | Asn | Asp | Ile | Ile | Arg | Ala | Pro | Thr | Ile | Glu | Gln | Met | |
| | | | | 85 | | | | 90 | | | | | | 95 | | |
| aaa | gat | gta | tat | ata | gta | cag | gac | ctc | atg | gag | aca | gat | ctt | tac | aag | 336 |
| Lys | Asp | Val | Tyr | Ile | Val | Gln | Asp | Leu | Met | Glu | Thr | Asp | Leu | Tyr | Lys | |
| | | | 100 | | | | | 105 | | | | | 110 | | | |
| ctc | ttg | aag | aca | cag | cac | ctc | agc | aat | gat | cat | atc | tgc | tat | ttt | ctt | 384 |
| Leu | Leu | Lys | Thr | Gln | His | Leu | Ser | Asn | Asp | His | Ile | Cys | Tyr | Phe | Leu | |
| | | 115 | | | | | 120 | | | | | 125 | | | | |
| tat | cag | atc | ctg | aga | gga | tta | aag | tat | ata | cat | tca | gct | aat | gtt | ctg | 432 |
| Tyr | Gln | Ile | Leu | Arg | Gly | Leu | Lys | Tyr | Ile | His | Ser | Ala | Asn | Val | Leu | |
| | | 130 | | | | 135 | | | | | 140 | | | | | |
| cac | cgt | gac | ctc | aag | cct | tcc | aac | ctc | ctg | ctg | aac | acc | act | tgt | gat | 480 |
| His | Arg | Asp | Leu | Lys | Pro | Ser | Asn | Leu | Leu | Leu | Asn | Thr | Thr | Cys | Asp | |
| | | | | 145 | 150 | | | 155 | | | | | | 160 | | |
| ctc | aag | atc | tgt | gac | ttt | ggc | ctt | gcc | cgt | gtt | gca | gat | cca | gac | cat | 528 |
| Leu | Lys | Ile | Cys | Asp | Phe | Gly | Leu | Ala | Arg | Val | Ala | Asp | Pro | Asp | His | |
| | | | 165 | | | | | 170 | | | | | | 175 | | |
| gat | cat | aca | ggg | ttc | ttg | aca | gag | tat | gta | gcc | acg | cgt | tgg | tac | aga | 576 |
| Asp | His | Thr | Gly | Phe | Leu | Thr | Glu | Tyr | Val | Ala | Thr | Arg | Trp | Tyr | Arg | |
| | | | 180 | | | | | 185 | | | | | 190 | | | |
| gct | cca | gaa | att | atg | ttg | aat | tcc | aag | ggt | tat | acc | aag | tcc | att | gat | 624 |
| Ala | Pro | Glu | Ile | Met | Leu | Asn | Ser | Lys | Gly | Tyr | Thr | Lys | Ser | Ile | Asp | |
| | | 195 | | | | 200 | | | | | | 205 | | | | |
| att | tgg | tct | gtg | ggc | tgc | atc | ctg | gca | gag | atg | cta | tcc | aac | agg | cct | 672 |
| Ile | Trp | Ser | Val | Gly | Cys | Ile | Leu | Ala | Glu | Met | Leu | Ser | Asn | Arg | Pro | |
| | | 210 | | | 215 | | | | | | 220 | | | | | |
| atc | ttc | cca | gga | aag | cat | tac | ctt | gac | cag | ctg | aat | cac | atc | ctg | ggt | 720 |
| Ile | Phe | Pro | Gly | Lys | His | Tyr | Leu | Asp | Gln | Leu | Asn | His | Ile | Leu | Gly | |
| | | 225 | | | 230 | | | | 235 | | | | | 240 | | |
| att | ctt | gga | tct | cca | tca | cag | gaa | gat | ctg | aat | tgt | ata | ata | aat | tta | 768 |
| Ile | Leu | Gly | Ser | Pro | Ser | Gln | Glu | Asp | Leu | Asn | Cys | Ile | Ile | Asn | Leu | |
| | | | 245 | | | | | 250 | | | | | | 255 | | |
| aaa | gct | aga | aac | tat | ttg | ctt | tct | ctc | ccg | cac | aaa | aat | aag | gtg | ccg | 816 |
| Lys | Ala | Arg | Asn | Tyr | Leu | Leu | Ser | Leu | Pro | His | Lys | Asn | Lys | Val | Pro | |
| | | | 260 | | | | | 265 | | | | | 270 | | | |
| tgg | aac | agg | ttg | ttc | cca | aac | gct | gac | tcc | aaa | gct | ctg | gat | tta | ctg | 864 |
| Trp | Asn | Arg | Leu | Phe | Pro | Asn | Ala | Asp | Ser | Lys | Ala | Leu | Asp | Leu | Leu | |
| | | 275 | | | | | 280 | | | | | 285 | | | | |
| gat | aaa | atg | ttg | aca | ttt | aac | cct | cac | aag | agg | att | gaa | gtt | gaa | cag | 912 |
| Asp | Lys | Met | Leu | Thr | Phe | Asn | Pro | His | Lys | Arg | Ile | Glu | Val | Glu | Gln | |
| | | 290 | | | | 295 | | | | | 300 | | | | | |
| gct | ctg | gcc | cac | ccg | tac | ctg | gag | cag | tat | tat | gac | cca | agt | gat | gag | 960 |
| Ala | Leu | Ala | His | Pro | Tyr | Leu | Glu | Gln | Tyr | Tyr | Asp | Pro | Ser | Asp | Glu | |
| | | 305 | | | 310 | | | | 315 | | | | | | 320 | |
| ccc | att | gct | gaa | gca | cca | ttc | aag | ttt | gac | atg | gag | ctg | gac | gac | tta | 1008 |
| Pro | Ile | Ala | Glu | Ala | Pro | Phe | Lys | Phe | Asp | Met | Glu | Leu | Asp | Asp | Leu | |
| | | | 325 | | | | | 330 | | | | | | 335 | | |
| cct | aag | gag | aag | ctc | aaa | gaa | ctc | att | ttt | gaa | gag | act | gct | cga | ttc | 1056 |
| Pro | Lys | Glu | Lys | Leu | Lys | Glu | Leu | Ile | Phe | Glu | Glu | Thr | Ala | Arg | Phe | |
| | | | 340 | | | | | 345 | | | | | 350 | | | |
| cag | cca | gga | tac | aga | tct | atg | gat | cca | ccg | gtc | gcc | acc | atg | gtg | agc | 1104 |
| Gln | Pro | Gly | Tyr | Arg | Ser | Met | Asp | Pro | Pro | Val | Ala | Thr | Met | Val | Ser | |
| | | 355 | | | | | 360 | | | | | 365 | | | | |

| | |
|---|------|
| aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg gtc gag ctg | 1152 |
| Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu Leu | |
| 370 375 380 | |
| gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc gag ggc gag | 1200 |
| Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly Glu | |
| 385 390 395 400 | |
| ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc tgc acc acc | 1248 |
| Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr Thr | |
| 405 410 415 | |
| ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc ctg acc tac | 1296 |
| Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr Tyr | |
| 420 425 430 | |
| ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag cag cac gac | 1344 |
| Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln His Asp | |
| 435 440 445 | |
| ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag cgc acc atc | 1392 |
| Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg Thr Ile | |
| 450 455 460 | |
| ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag gtg aag ttc | 1440 |
| Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys Phe | |
| 465 470 475 480 | |
| gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc atc gac ttc | 1488 |
| Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile Asp Phe | |
| 485 490 495 | |
| aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac aac tac aac | 1536 |
| Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn Tyr Asn | |
| 500 505 510 | |
| agc cac aac gtc tat atc atg gcc gac aag cag aag aac ggc atc aag | 1584 |
| Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly Ile Lys | |
| 515 520 525 | |
| gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc gtg cag ctc | 1632 |
| Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val Gln Leu | |
| 530 535 540 | |
| gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc ccc gtg ctg | 1680 |
| Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro Val Leu | |
| 545 550 555 560 | |
| ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg agc aaa gac | 1728 |
| Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser Lys Asp | |
| 565 570 575 | |
| ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc gtg acc gcc | 1776 |
| Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val Thr Ala | |
| 580 585 590 | |
| gcc ggg atc act ctc ggc atg gac gag ctg tac aag taa | 1815 |
| Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys | |
| 595 600 | |

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<211> 604

<212> PRT

<213> Artificial Sequence

<220>

<223> Erk2-EGFP fusion

<400> 59

Met Ala Ala Ala Ala Ala Ala Gly Pro Glu Met Val Arg Gly Gln Val

| | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1 | | | | 5 | | | | | 10 | | | | 15 |
| Phe | Asp | Val | Gly | Pro | Arg | Tyr | Thr | Asn | Leu | Ser | Tyr | Ile | Gly |
| | | | 20 | | | | | 25 | | | | | 30 |
| Ala | Tyr | Gly | Met | Val | Cys | Ser | Ala | Tyr | Asp | Asn | Leu | Asn | Lys |
| | | 35 | | | | | 40 | | | | | 45 | |
| Val | Ala | Ile | Lys | Lys | Ile | Ser | Pro | Phe | Glu | His | Gln | Thr | Tyr |
| | | 50 | | | | 55 | | | | | 60 | | |
| Arg | Thr | Leu | Arg | Glu | Ile | Lys | Ile | Leu | Leu | Arg | Phe | Arg | His |
| 65 | | | | | 70 | | | | | 75 | | | 80 |
| Ile | Ile | Gly | Ile | Asn | Asp | Ile | Ile | Arg | Ala | Pro | Thr | Ile | Glu |
| | | | | 85 | | | | | 90 | | | | 95 |
| Lys | Asp | Val | Tyr | Ile | Val | Gln | Asp | Leu | Met | Glu | Thr | Asp | Leu |
| | | 100 | | | | | | 105 | | | | 110 | |
| Leu | Leu | Lys | Thr | Gln | His | Leu | Ser | Asn | Asp | His | Ile | Cys | Tyr |
| | | 115 | | | | | 120 | | | | | 125 | |
| Tyr | Gln | Ile | Leu | Arg | Gly | Leu | Lys | Tyr | Ile | His | Ser | Ala | Asn |
| | | 130 | | | | 135 | | | | | 140 | | |
| His | Arg | Asp | Leu | Lys | Pro | Ser | Asn | Leu | Leu | Leu | Asn | Thr | Thr |
| 145 | | | | | 150 | | | | | 155 | | | 160 |
| Leu | Lys | Ile | Cys | Asp | Phe | Gly | Leu | Ala | Arg | Val | Ala | Asp | Pro |
| | | | 165 | | | | | | 170 | | | | 175 |
| Asp | His | Thr | Gly | Phe | Leu | Thr | Glu | Tyr | Val | Ala | Thr | Arg | Trp |
| | | 180 | | | | | | 185 | | | | 190 | |
| Ala | Pro | Glu | Ile | Met | Leu | Asn | Ser | Lys | Gly | Tyr | Thr | Lys | Ser |
| | | 195 | | | | | 200 | | | | | 205 | |
| Ile | Trp | Ser | Val | Gly | Cys | Ile | Leu | Ala | Glu | Met | Leu | Ser | Asn |
| | 210 | | | | | 215 | | | | | 220 | | |
| Ile | Phe | Pro | Gly | Lys | His | Tyr | Leu | Asp | Gln | Leu | Asn | His | Ile |
| 225 | | | | | 230 | | | | | 235 | | | 240 |
| Ile | Leu | Gly | Ser | Pro | Ser | Gln | Glu | Asp | Leu | Asn | Cys | Ile | Ile |
| | | | 245 | | | | | | 250 | | | | 255 |
| Lys | Ala | Arg | Asn | Tyr | Leu | Leu | Ser | Leu | Pro | His | Lys | Asn | Lys |
| | | | 260 | | | | | 265 | | | | 270 | |
| Trp | Asn | Arg | Leu | Phe | Pro | Asn | Ala | Asp | Ser | Lys | Ala | Leu | Asp |
| | 275 | | | | | | 280 | | | | | 285 | |
| Asp | Lys | Met | Leu | Thr | Phe | Asn | Pro | His | Lys | Arg | Ile | Glu | Val |
| | 290 | | | | | 295 | | | | | 300 | | |
| Ala | Leu | Ala | His | Pro | Tyr | Leu | Glu | Gln | Tyr | Tyr | Asp | Pro | Ser |
| 305 | | | | | 310 | | | | | 315 | | | 320 |
| Pro | Ile | Ala | Glu | Ala | Pro | Phe | Lys | Phe | Asp | Met | Glu | Leu | Asp |
| | | | 325 | | | | | | 330 | | | | 335 |
| Pro | Lys | Glu | Lys | Leu | Lys | Glu | Leu | Ile | Phe | Glu | Glu | Thr | Ala |
| | | | 340 | | | | | 345 | | | | | 350 |
| Gln | Pro | Gly | Tyr | Arg | Ser | Met | Asp | Pro | Pro | Val | Ala | Thr | Met |
| | 355 | | | | | | 360 | | | | | 365 | |
| Lys | Gly | Glu | Glu | Leu | Phe | Thr | Gly | Val | Val | Pro | Ile | Leu | Val |
| | 370 | | | | | 375 | | | | | 380 | | |
| Asp | Gly | Asp | Val | Asn | Gly | His | Lys | Phe | Ser | Val | Ser | Gly | Glu |
| 385 | | | | | 390 | | | | | 395 | | | 400 |
| Gly | Asp | Ala | Thr | Tyr | Gly | Lys | Leu | Thr | Leu | Lys | Phe | Ile | Cys |
| | | | 405 | | | | | | 410 | | | | 415 |
| Gly | Lys | Leu | Pro | Val | Pro | Trp | Pro | Thr | Leu | Val | Thr | Thr | Leu |
| | | | 420 | | | | | 425 | | | | | 430 |
| Gly | Val | Gln | Cys | Phe | Ser | Arg | Tyr | Pro | Asp | His | Met | Lys | Gln |
| | | | 435 | | | | 440 | | | | | 445 | |
| Phe | Phe | Lys | Ser | Ala | Met | Pro | Glu | Gly | Tyr | Val | Gln | Glu | Arg |
| | 450 | | | | | 455 | | | | | 460 | | |
| Phe | Phe | Lys | Asp | Asp | Gly | Asn | Tyr | Lys | Thr | Arg | Ala | Glu | Val |
| 465 | | | | 470 | | | | | | 475 | | | 480 |
| Glu | Gly | Asp | Thr | Leu | Val | Asn | Arg | Ile | Glu | Leu | Lys | Gly | Ile |
| | | | 485 | | | | | | 490 | | | | 495 |
| Lys | Glu | Asp | Gly | Asn | Ile | Leu | Gly | His | Lys | Leu | Glu | Tyr | Asn |
| | | | 500 | | | | | 505 | | | | | 510 |

Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly Ile Lys
515 520 525
Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val Gln Leu
530 535 540
Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro Val Leu
545 550 555 560
Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser Lys Asp
565 570 575
Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val Thr Ala
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<220>

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1 5 10 15
gaa ggg ggc gga gga aag cgc aaa ggg aaa agc aag aag tgg aaa gaa 96
Glu Gly Gly Gly Gly Lys Arg Lys Gly Lys Ser Lys Lys Trp Lys Glu
20 25 30
atc ctg aag ttc cct cac att agc cag tgt gaa gac ctc cga agg acc 144
Ile Leu Lys Phe Pro His Ile Ser Gln Cys Glu Asp Leu Arg Arg Thr
35 40 45
ata gac aga gat tac tgc agt tta tgt gac aag cag cca atc ggg agg 192
Ile Asp Arg Asp Tyr Cys Ser Leu Cys Asp Lys Gln Pro Ile Gly Arg
50 55 60
ctg ctt ttc cgg cag ttt tgt gaa acc agg cct ggg ctg gag tgt tac 240
Leu Leu Phe Arg Gln Phe Cys Glu Thr Arg Pro Gly Leu Glu Cys Tyr
65 70 75 80
att cag ttc ctg gac tcc gtg gca gaa tat gaa gtt act cca gat gaa 288
Ile Gln Phe Leu Asp Ser Val Ala Glu Tyr Glu Val Thr Pro Asp Glu
85 90 95
aaa ctg gga gag aaa ggg aag gaa att atg acc aag tac ctc acc cca 336
Lys Leu Gly Glu Lys Gly Lys Glu Ile Met Thr Lys Tyr Leu Thr Pro
100 105 110
aag tcc cct gtt ttc ata gcc caa gtt ggc caa gac ctg gtc tcc cag 384
Lys Ser Pro Val Phe Ile Ala Gln Val Gly Gln Asp Leu Val Ser Gln
115 120 125
acg gag gag aag ctc cta cag aag ccg tgc aaa gaa ctc ttt tct gcc 432
Thr Glu Glu Lys Leu Leu Gln Lys Pro Cys Lys Glu Leu Phe Ser Ala

| | | | |
|--|-----|-----|------|
| 130 | 135 | 140 | |
| tgt gca cag tct gtc cac gag tac ctg agg gga gaa cca ttc cac gaa | | | 480 |
| Cys Ala Gln Ser Val His Glu Tyr Leu Arg Gly Glu Pro Phe His Glu | | | |
| 145 | 150 | 155 | 160 |
| tat ctg gac agc atg ttt ttt gac cgc ttt ctc cag tgg aag tgg ttg | | | 528 |
| Tyr Leu Asp Ser Met Phe Phe Asp Arg Phe Leu Gln Trp Lys Trp Leu | | | |
| 165 | 170 | 175 | |
| gaa agg caa ccg gtg acc aaa aac act ttc agg cag tat cga gtg cta | | | 576 |
| Glu Arg Gln Pro Val Thr Lys Asn Thr Phe Arg Gln Tyr Arg Val Leu | | | |
| 180 | 185 | 190 | |
| gga aaa ggg ggc ttc ggg gag gtc tgt gcc tgc cag gtt cgg gcc acg | | | 624 |
| Gly Lys Gly Gly Phe Gly Glu Val Cys Ala Cys Gln Val Arg Ala Thr | | | |
| 195 | 200 | 205 | |
| ggt aaa atg tat gcc tgc aag cgc ttg gag aag aag agg atc aaa aag | | | 672 |
| Gly Lys Met Tyr Ala Cys Lys Arg Leu Glu Lys Lys Arg Ile Lys Lys | | | |
| 210 | 215 | 220 | |
| agg aaa ggg gag tcc atg gcc ctc aat gag aag cag atc ctc gag aag | | | 720 |
| Arg Lys Gly Glu Ser Met Ala Leu Asn Glu Lys Gln Ile Leu Glu Lys | | | |
| 225 | 230 | 235 | 240 |
| gtc aac agt cag ttt gtg gtc aac ctg gcc tat gcc tac gag acc aag | | | 768 |
| Val Asn Ser Gln Phe Val Val Asn Leu Ala Tyr Ala Tyr Glu Thr Lys | | | |
| 245 | 250 | 255 | |
| gat gca ctg tgc ttg gtc ctg acc atc atg aat ggg ggt gac ctg aag | | | 816 |
| Asp Ala Leu Cys Leu Val Leu Thr Ile Met Asn Gly Gly Asp Leu Lys | | | |
| 260 | 265 | 270 | |
| ttc cac atc tac aac atg ggc aac cct ggc ttc gag gag cgg gcc | | | 864 |
| Phe His Ile Tyr Asn Met Gly Asn Pro Gly Phe Glu Glu Glu Arg Ala | | | |
| 275 | 280 | 285 | |
| ttg ttt tat gcg gca gag atc ctc tgc ggc tta gaa gac ctc cac cgt | | | 912 |
| Leu Phe Tyr Ala Ala Glu Ile Leu Cys Gly Leu Glu Asp Leu His Arg | | | |
| 290 | 295 | 300 | |
| gag aac acc gtc tac cga gat ctg aaa cct gaa aac atc ctg tta gat | | | 960 |
| Glu Asn Thr Val Tyr Arg Asp Leu Lys Pro Glu Asn Ile Leu Leu Asp | | | |
| 305 | 310 | 315 | 320 |
| gat tat ggc cac att agg atc tca gac ctg ggc ttg gct gtg aag atc | | | 1008 |
| Asp Tyr Gly His Ile Arg Ile Ser Asp Leu Gly Leu Ala Val Lys Ile | | | |
| 325 | 330 | 335 | |
| ccc gag gga gac ctg atc cgc ggc cgg gtg ggc act gtt ggc tac atg | | | 1056 |
| Pro Glu Gly Asp Leu Ile Arg Gly Arg Val Gly Thr Val Gly Tyr Met | | | |
| 340 | 345 | 350 | |
| gcc ccc gaa gtc ctg aac aac cag agg tac ggc ctg agc ccc gac tac | | | 1104 |
| Ala Pro Glu Val Leu Asn Asn Gln Arg Tyr Gly Leu Ser Pro Asp Tyr | | | |
| 355 | 360 | 365 | |
| tggt ggc ctt ggc tgc ctc atc tat gag atg atc gag ggc cag tcg ccg | | | 1152 |
| Trp Gly Leu Gly Cys Leu Ile Tyr Glu Met Ile Glu Gly Gln Ser Pro | | | |
| 370 | 375 | 380 | |
| ttc cgc ggc cgt aag gag aag gtg aag cgg gag gag gtg gac cgc cgg | | | 1200 |
| Phe Arg Gly Arg Lys Glu Lys Val Lys Arg Glu Glu Val Asp Arg Arg | | | |
| 385 | 390 | 395 | 400 |
| gtc ctg gag acg gag gag gtg tac tcc cac aag ttc tcc gag gag gcc | | | 1248 |
| Val Leu Glu Thr Glu Glu Val Tyr Ser His Lys Phe Ser Glu Glu Ala | | | |
| 405 | 410 | 415 | |
| aag tcc atc tgc aag atg ctg ctc acg aaa gat gcg aag cag agg ctg | | | 1296 |
| Lys Ser Ile Cys Lys Met Leu Leu Thr Lys Asp Ala Lys Gln Arg Leu | | | |
| 420 | 425 | 430 | |
| ggc tgc cag gag gag ggg gct gca gag gtc aag aga cac ccc ttc ttc | | | 1344 |
| Gly Cys Gln Glu Glu Gly Ala Ala Glu Val Lys Arg His Pro Phe Phe | | | |
| 435 | 440 | 445 | |
| agg aac atg aac ttc aag cgc tta gaa gcc ggg atg ttg gac cct ccc | | | 1392 |
| Arg Asn Met Asn Phe Lys Arg Leu Glu Ala Gly Met Leu Asp Pro Pro | | | |
| 450 | 455 | 460 | |
| ttc gtt cca gac ccc cgc gct gtg tac tgt aag gac gtg ctg gac atc | | | 1440 |
| Phe Val Pro Asp Pro Arg Ala Val Tyr Cys Lys Asp Val Leu Asp Ile | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 465 | | | | | 470 | | | | | 475 | | | | 480 | | |
| gag | cag | ttc | tcc | act | gtg | aag | ggc | gtc | aat | ctg | gac | cac | aca | gac | gac | 1488 |
| Glu | Gln | Phe | Ser | Thr | Val | Lys | Gly | Val | Asn | Leu | Asp | His | Thr | Asp | Asp | |
| | | | | 485 | | | | | 490 | | | | | 495 | | |
| gac | ttc | tac | tcc | aag | ttc | tcc | acg | ggc | tct | gtg | tcc | atc | cca | tgg | caa | 1536 |
| Asp | Phe | Tyr | Ser | Lys | Phe | Ser | Thr | Gly | Ser | Val | Ser | Ile | Pro | Trp | Gln | |
| | | | 500 | | | | | 505 | | | | | 510 | | | |
| aac | gag | atg | ata | gaa | aca | gaa | tgc | ttt | aag | gag | ctg | aac | gtg | ttt | gga | 1584 |
| Asn | Glu | Met | Ile | Glu | Thr | Glu | Cys | Phe | Lys | Glu | Leu | Asn | Val | Phe | Gly | |
| | | 515 | | | | | 520 | | | | | 525 | | | | |
| cct | aat | ggt | acc | ctc | ccg | cca | gat | ctg | aac | aga | aac | cac | cct | ccg | gaa | 1632 |
| Pro | Asn | Gly | Thr | Leu | Pro | Pro | Asp | Leu | Asn | Arg | Asn | His | Pro | Pro | Glu | |
| | | 530 | | | | 535 | | | | | | | | | | |
| ccg | ccc | aag | aaa | ggg | ctg | ctc | cag | aga | ctc | ttc | aag | cgg | cag | cat | cag | 1680 |
| Pro | Pro | Lys | Lys | Gly | Leu | Leu | Gln | Arg | Leu | Phe | Lys | Arg | Gln | His | Gln | |
| | | | | 545 | 550 | | | | | 555 | | | | | 560 | |
| aac | aat | tcc | aag | agt | tcg | ccc | agc | tcc | aag | acc | agt | ttt | aac | cac | cac | 1728 |
| Asn | Asn | Ser | Lys | Ser | Ser | Pro | Ser | Ser | Lys | Thr | Ser | Phe | Asn | His | His | |
| | | | 565 | | | | | | 570 | | | | | 575 | | |
| ata | aac | tca | aac | cat | gtc | agc | tcg | aac | tcc | acc | gga | agc | agc | agg | gat | 1776 |
| Ile | Asn | Ser | Asn | His | Val | Ser | Ser | Asn | Ser | Thr | Gly | Ser | Ser | Arg | Asp | |
| | | | 580 | | | | | 585 | | | | | | 590 | | |
| cca | ccg | gtc | gcc | acc | atg | gtg | agc | aag | ggc | gag | gag | ctg | ttc | acc | ggg | 1824 |
| Pro | Pro | Val | Ala | Thr | Met | Val | Ser | Lys | Gly | Glu | Glu | Leu | Phe | Thr | Gly | |
| | | 595 | | | | 600 | | | | | | | | | | |
| gtg | gtg | ccc | atc | ctg | gtc | gag | ctg | gac | ggc | gac | gta | aac | ggc | cac | aag | 1872 |
| Val | Val | Pro | Ile | Leu | Val | Glu | Leu | Asp | Gly | Asp | Val | Asn | Gly | His | Lys | |
| | | 610 | | | | 615 | | | | | | | | | | |
| ttc | agc | gtg | tcc | ggc | gag | ggc | gag | ggc | gat | gcc | acc | tac | ggc | aag | ctg | 1920 |
| Phe | Ser | Val | Ser | Gly | Glu | Gly | Glu | Gly | Asp | Ala | Thr | Tyr | Gly | Lys | Leu | |
| | | | | 625 | 630 | | | | | 635 | | | | | 640 | |
| acc | ctg | aag | ttc | atc | tcg | acc | acc | ggc | aag | ctg | ccc | gtg | ccc | tgg | ccc | 1968 |
| Thr | Leu | Lys | Phe | Ile | Cys | Thr | Thr | Gly | Lys | Leu | Pro | Val | Pro | Trp | Pro | |
| | | | | 645 | | | | | 650 | | | | | 655 | | |
| acc | ctc | gtg | acc | acc | ctg | acc | tac | ggc | gtg | cag | tgc | ttc | agc | cgc | tac | 2016 |
| Thr | Leu | Val | Thr | Thr | Leu | Thr | Tyr | Gly | Val | Gln | Cys | Phe | Ser | Arg | Tyr | |
| | | | 660 | | | | | 665 | | | | | | 670 | | |
| ccc | gac | cac | atg | aag | cag | cac | gac | ttc | ttc | aag | tcc | gcc | atg | ccc | gaa | 2064 |
| Pro | Asp | His | Met | Lys | Gln | His | Asp | Phe | Phe | Lys | Ser | Ala | Met | Pro | Glu | |
| | | 675 | | | | | 680 | | | | | | | 685 | | |
| ggc | tac | gtc | cag | gag | cgc | acc | atc | ttc | ttc | aag | gac | gac | ggc | aac | tac | 2112 |
| Gly | Tyr | Val | Gln | Glu | Arg | Thr | Ile | Phe | Phe | Lys | Asp | Asp | Gly | Asn | Tyr | |
| | | 690 | | | | 695 | | | | | | | | | | |
| aag | acc | cgc | gcc | gag | gtg | aag | ttc | gag | ggc | gac | acc | ctg | gtg | aac | cgc | 2160 |
| Lys | Thr | Arg | Ala | Glu | Val | Lys | Phe | Glu | Gly | Asp | Thr | Leu | Val | Asn | Arg | |
| | | | | 705 | 710 | | | | | 715 | | | | | 720 | |
| atc | gag | ctg | aag | ggc | atc | gac | ttc | aag | gag | gac | ggc | aac | atc | ctg | ggg | 2208 |
| Ile | Glu | Leu | Lys | Gly | Ile | Asp | Phe | Lys | Glu | Asp | Gly | Asn | Ile | Leu | Gly | |
| | | | | 725 | | | | | 730 | | | | | | 735 | |
| cac | aag | ctg | gag | tac | aac | tac | aac | agc | cac | Asn | Val | Tyr | atc | atg | gcc | 2256 |
| His | Lys | Leu | Glu | Tyr | Asn | Tyr | Asn | Ser | His | Asn | | | Ile | Met | Ala | |
| | | | 740 | | | | | 745 | | | | | | 750 | | |
| gac | aag | cag | aag | aac | ggc | atc | aag | gtg | aac | ttc | aag | atc | cgc | cac | aac | 2304 |
| Asp | Lys | Gln | Lys | Asn | Gly | Ile | Lys | Val | Asn | Phe | Lys | Ile | Arg | His | Asn | |
| | | | 755 | | | | 760 | | | | | | | | | |
| atc | gag | gac | ggc | agc | gtg | cag | ctc | gcc | gac | cac | tac | cag | cag | aac | acc | 2352 |
| Ile | Glu | Asp | Gly | Ser | Val | Gln | Leu | Ala | Asp | His | Tyr | Gln | Gln | Asn | Thr | |
| | | | 770 | | | 775 | | | | | | | | | | |
| ccc | atc | ggc | gac | ggc | ccc | gtg | ctg | ctg | ccc | gac | aac | cac | tac | ctg | agc | 2400 |
| Pro | Ile | Gly | Asp | Gly | Pro | Val | Leu | Leu | Pro | Asp | Asn | His | Tyr | Leu | Ser | |
| | | | | 785 | 790 | | | | | 795 | | | | | 800 | |
| acc | cag | tcc | gcc | ctg | agc | aaa | gac | ccc | aac | gag | aag | cgc | gat | cac | atg | 2448 |
| Thr | Gln | Ser | Ala | Leu | Ser | Lys | Asp | Pro | Asn | Glu | Lys | Arg | Asp | His | Met | |

| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|------|
| | | | | 805 | | | | | | 810 | | | | | 815 | | |
| gtc | ctg | ctg | gag | ttc | gtg | acc | gcc | gcc | ggg | atc | act | ctc | ggc | atg | gac | | 2496 |
| Val | Leu | Leu | Glu | Phe | Val | Thr | Ala | Ala | Gly | Ile | Thr | Leu | Gly | Met | Asp | | |
| | | | | 820 | | | | | 825 | | | | 830 | | | | |
| gag | ctg | tac | aag | taa | | | | | | | | | | | | | 2511 |
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<220>

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| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Glu | Gly | Gly | Gly | Gly | Lys | Arg | Lys | Gly | Lys | Ser | Lys | Lys | Trp | Lys | Glu |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Ile | Leu | Lys | Phe | Pro | His | Ile | Ser | Gln | Cys | Glu | Asp | Leu | Arg | Arg | Thr |
| | | 35 | | | | | 40 | | | | 45 | | | | |
| Ile | Asp | Arg | Asp | Tyr | Cys | Ser | Leu | Cys | Asp | Lys | Gln | Pro | Ile | Gly | Arg |
| | 50 | | | | 55 | | | | | | 60 | | | | |
| Leu | Leu | Phe | Arg | Gln | Phe | Cys | Glu | Thr | Arg | Pro | Gly | Leu | Glu | Cys | Tyr |
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| Ile | Gln | Phe | Leu | Asp | Ser | Val | Ala | Glu | Tyr | Glu | Val | Thr | Pro | Asp | Glu |
| | | | 85 | | | | | 90 | | | | | 95 | | |
| Lys | Leu | Gly | Glu | Lys | Gly | Lys | Glu | Ile | Met | Thr | Lys | Tyr | Leu | Thr | Pro |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Lys | Ser | Pro | Val | Phe | Ile | Ala | Gln | Val | Gly | Gln | Asp | Leu | Val | Ser | Gln |
| | | 115 | | | | 120 | | | | | 125 | | | | |
| Thr | Glu | Glu | Lys | Leu | Leu | Gln | Lys | Pro | Cys | Lys | Glu | Leu | Phe | Ser | Ala |
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| Cys | Ala | Gln | Ser | Val | His | Glu | Tyr | Leu | Arg | Gly | Glu | Pro | Phe | His | Glu |
| 145 | | | | 150 | | | | | | 155 | | | | 160 | |
| Tyr | Leu | Asp | Ser | Met | Phe | Phe | Asp | Arg | Phe | Leu | Gln | Trp | Lys | Trp | Leu |
| | | | 165 | | | | | | 170 | | | | | 175 | |
| Glu | Arg | Gln | Pro | Val | Thr | Lys | Asn | Thr | Phe | Arg | Gln | Tyr | Arg | Val | Leu |
| | | | 180 | | | | 185 | | | | | | 190 | | |
| Gly | Lys | Gly | Gly | Phe | Gly | Glu | Val | Cys | Ala | Cys | Gln | Val | Arg | Ala | Thr |
| | | 195 | | | | | 200 | | | | | 205 | | | |
| Gly | Lys | Met | Tyr | Ala | Cys | Lys | Arg | Leu | Glu | Lys | Lys | Arg | Ile | Lys | Lys |
| | 210 | | | | 215 | | | | | | 220 | | | | |
| Arg | Lys | Gly | Glu | Ser | Met | Ala | Leu | Asn | Glu | Lys | Gln | Ile | Leu | Glu | Lys |
| 225 | | | | 230 | | | | | | 235 | | | | 240 | |
| Val | Asn | Ser | Gln | Phe | Val | Val | Asn | Leu | Ala | Tyr | Ala | Tyr | Glu | Thr | Lys |
| | | | 245 | | | | | | 250 | | | | | 255 | |
| Asp | Ala | Leu | Cys | Leu | Val | Leu | Thr | Ile | Met | Asn | Gly | Gly | Asp | Leu | Lys |
| | | 260 | | | | | 265 | | | | | | 270 | | |
| Phe | His | Ile | Tyr | Asn | Met | Gly | Asn | Pro | Gly | Phe | Glu | Glu | Glu | Arg | Ala |
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| Leu | Phe | Tyr | Ala | Ala | Glu | Ile | Leu | Cys | Gly | Leu | Glu | Asp | Leu | His | Arg |
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| Glu | Asn | Thr | Val | Tyr | Arg | Asp | Leu | Lys | Pro | Glu | Asn | Ile | Leu | Leu | Asp |

| | | | | | | | | | | | | | | |
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| Asp | Tyr | Gly | His | Ile | Arg | Ile | Ser | Asp | Leu | Gly | Leu | Ala | Val | Lys Ile |
| | | | | 325 | | | | | 330 | | | | | 335 |
| Pro | Glu | Gly | Asp | Leu | Ile | Arg | Gly | Arg | Val | Gly | Thr | Val | Gly | Tyr Met |
| | | | 340 | | | | | 345 | | | | | 350 | |
| Ala | Pro | Glu | Val | Leu | Asn | Asn | Gln | Arg | Tyr | Gly | Leu | Ser | Pro | Asp Tyr |
| | | 355 | | | | | 360 | | | | 365 | | | |
| Trp | Gly | Leu | Gly | Cys | Leu | Ile | Tyr | Glu | Met | Ile | Glu | Gly | Gln | Ser Pro |
| | 370 | | | | | 375 | | | | 380 | | | | |
| Phe | Arg | Gly | Arg | Lys | Glu | Lys | Val | Lys | Arg | Glu | Glu | Val | Asp | Arg Arg |
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| Val | Leu | Glu | Thr | Glu | Glu | Val | Tyr | Ser | His | Lys | Phe | Ser | Glu | Glu Ala |
| | | | 405 | | | | | 410 | | | | | | 415 |
| Lys | Ser | Ile | Cys | Lys | Met | Leu | Leu | Thr | Lys | Asp | Ala | Lys | Gln | Arg Leu |
| | | 420 | | | | | | 425 | | | | | 430 | |
| Gly | Cys | Gln | Glu | Glu | Gly | Ala | Ala | Glu | Val | Lys | Arg | His | Pro | Phe Phe |
| | | 435 | | | | 440 | | | | | 445 | | | |
| Arg | Asn | Met | Asn | Phe | Lys | Arg | Leu | Glu | Ala | Gly | Met | Leu | Asp | Pro Pro |
| | 450 | | | | 455 | | | | | 460 | | | | |
| Phe | Val | Pro | Asp | Pro | Arg | Ala | Val | Tyr | Cys | Lys | Asp | Val | Leu | Asp Ile |
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| Glu | Gln | Phe | Ser | Thr | Val | Lys | Gly | Val | Asn | Leu | Asp | His | Thr | Asp Asp |
| | | | 485 | | | | | 490 | | | | | | 495 |
| Asp | Phe | Tyr | Ser | Lys | Phe | Ser | Thr | Gly | Ser | Val | Ser | Ile | Pro | Trp Gln |
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| Asn | Glu | Met | Ile | Glu | Thr | Glu | Cys | Phe | Lys | Glu | Leu | Asn | Val | Phe Gly |
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| Pro | Asn | Gly | Thr | Leu | Pro | Pro | Asp | Leu | Asn | Arg | Asn | His | Pro | Pro Glu |
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| Pro | Pro | Lys | Lys | Gly | Leu | Leu | Gln | Arg | Leu | Phe | Lys | Arg | Gln | His Gln |
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| Asn | Asn | Ser | Lys | Ser | Ser | Pro | Ser | Ser | Lys | Thr | Ser | Phe | Asn | His His |
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| Ile | Asn | Ser | Asn | His | Val | Ser | Ser | Asn | Ser | Thr | Gly | Ser | Ser | Arg Asp |
| | | 580 | | | | | | 585 | | | | 590 | | |
| Pro | Pro | Val | Ala | Thr | Met | Val | Ser | Lys | Gly | Glu | Glu | Leu | Phe | Thr Gly |
| | | 595 | | | | 600 | | | | | 605 | | | |
| Val | Val | Pro | Ile | Leu | Val | Glu | Leu | Asp | Gly | Asp | Val | Asn | Gly | His Lys |
| | 610 | | | | 615 | | | | | 620 | | | | |
| Phe | Ser | Val | Ser | Gly | Glu | Gly | Glu | Gly | Asp | Ala | Thr | Tyr | Gly | Lys Leu |
| 625 | | | | 630 | | | | | 635 | | | | | 640 |
| Thr | Leu | Lys | Phe | Ile | Cys | Thr | Thr | Gly | Lys | Leu | Pro | Val | Pro | Trp Pro |
| | | | 645 | | | | | 650 | | | | | 655 | |
| Thr | Leu | Val | Thr | Thr | Leu | Thr | Tyr | Gly | Val | Gln | Cys | Phe | Ser | Arg Tyr |
| | | 660 | | | | | 665 | | | | | 670 | | |
| Pro | Asp | His | Met | Lys | Gln | His | Asp | Phe | Phe | Lys | Ser | Ala | Met | Pro Glu |
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| Gly | Tyr | Val | Gln | Glu | Arg | Thr | Ile | Phe | Phe | Lys | Asp | Asp | Gly | Asn Tyr |
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| Lys | Thr | Arg | Ala | Glu | Val | Lys | Phe | Glu | Gly | Asp | Thr | Leu | Val | Asn Arg |
| 705 | | | | 710 | | | | | 715 | | | | | 720 |
| Ile | Glu | Leu | Lys | Gly | Ile | Asp | Phe | Lys | Glu | Asp | Gly | Asn | Ile | Leu Gly |
| | | | 725 | | | | | 730 | | | | | 735 | |
| His | Lys | Leu | Glu | Tyr | Asn | Tyr | Asn | Ser | His | Asn | Val | Tyr | Ile | Met Ala |
| | | 740 | | | | 745 | | | | | | 750 | | |
| Asp | Lys | Gln | Lys | Asn | Gly | Ile | Lys | Val | Asn | Phe | Lys | Ile | Arg | His Asn |
| | 755 | | | | 760 | | | | | | 765 | | | |
| Ile | Glu | Asp | Gly | Ser | Val | Gln | Leu | Ala | Asp | His | Tyr | Gln | Gln | Asn Thr |
| | 770 | | | | 775 | | | | | 780 | | | | |
| Pro | Ile | Gly | Asp | Gly | Pro | Val | Leu | Leu | Pro | Asp | Asn | His | Tyr | Leu Ser |
| 785 | | | | 790 | | | | | 795 | | | | | 800 |
| Thr | Gln | Ser | Ala | Leu | Ser | Lys | Asp | Pro | Asn | Glu | Lys | Arg | Asp | His Met |
| | | | 805 | | | | | 810 | | | | | 815 | |

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Glu Leu Tyr Lys
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| gat tct aca ttc aca gtc ctg aaa cga tat cag aat tta aaa cct ata | 96 |
| Asp Ser Thr Phe Thr Val Leu Lys Arg Tyr Gln Asn Leu Lys Pro Ile | |
| 20 25 30 | |
| ggc tca gga gct caa gga ata gta tgc gca gct tat gat gcc att ctt | 144 |
| Gly Ser Gly Ala Gln Gly Ile Val Cys Ala Ala Tyr Asp Ala Ile Leu | |
| 35 40 45 | |
| gaa aga aat gtt gca atc aag aag cta agc cga cca ttt cag aat cag | 192 |
| Glu Arg Asn Val Ala Ile Lys Lys Leu Ser Arg Pro Phe Gln Asn Gln | |
| 50 55 60 | |
| act cat gcc aag cgg gcc tac aga gag cta gtt ctt atg aaa tgt gtt | 240 |
| Thr His Ala Lys Arg Ala Tyr Arg Glu Leu Val Leu Met Lys Cys Val | |
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| aat cac aaa aat ata att ggc ctt ttg aat gtt ttc aca cca cag aaa | 288 |
| Asn His Lys Asn Ile Gly Leu Leu Asn Val Phe Thr Pro Gln Lys | |
| 85 90 95 | |
| tcc cta gaa gaa ttt caa gat gtt tac ata gtc atg gag ctc atg gat | 336 |
| Ser Leu Glu Glu Phe Gln Asp Val Tyr Ile Val Met Glu Leu Met Asp | |
| 100 105 110 | |
| gca aat ctt tgc caa gtg att cag atg gag cta gat cat gaa aga atg | 384 |
| Ala Asn Leu Cys Gln Val Ile Gln Met Glu Leu Asp His Glu Arg Met | |
| 115 120 125 | |
| tcc tac ctt ctc tat cag atg ctg tgt gga atc aag cac ctt cat tct | 432 |
| Ser Tyr Leu Leu Tyr Gln Met Leu Cys Gly Ile Lys His Leu His Ser | |
| 130 135 140 | |
| gct gga att att cat cgg gac tta aag ccc agt aat ata gta gta aaa | 480 |
| Ala Gly Ile Ile His Arg Asp Leu Lys Pro Ser Asn Ile Val Val Lys | |
| 145 150 155 160 | |
| tct gat tgc act ttg aag att ctt gac ttc ggt ctg gcc agg act gca | 528 |
| Ser Asp Cys Thr Leu Lys Ile Leu Asp Phe Gly Leu Ala Arg Thr Ala | |
| 165 170 175 | |
| gga acg agt ttt atg atg acg cct tat gta gtg act cgc tac tac aga | 576 |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Gly | Thr | Ser | Phe | Met | Met | Thr | Pro | Tyr | Val | Val | Thr | Arg | Tyr | Tyr | Arg | |
| | | | 180 | | | | | 185 | | | | | 190 | | | |
| gca | ccc | gag | gtc | atc | ctt | ggc | atg | ggc | tac | aag | gaa | aac | gtg | gat | tta | 624 |
| Ala | Pro | Glu | Val | Ile | Leu | Gly | Met | Gly | Tyr | Lys | Glu | Asn | Val | Asp | Leu | |
| | | 195 | | | | | 200 | | | | | 205 | | | | |
| tgg | tct | gtg | ggg | tgc | att | atg | gga | gaa | atg | gtt | tgc | cac | aaa | atc | ctc | 672 |
| Trp | Ser | Val | Gly | Cys | Ile | Met | Gly | Glu | Met | Val | Cys | His | Lys | Ile | Leu | |
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| Phe | Pro | Gly | Arg | Asp | Tyr | Ile | Asp | Gln | Trp | Asn | Lys | Val | Ile | Glu | Gln | |
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| ctt | gga | aca | cca | tgt | cct | gaa | ttc | atg | aag | aaa | ctg | caa | cca | aca | gta | 768 |
| Leu | Gly | Thr | Pro | Cys | Pro | Glu | Phe | Met | Lys | Lys | Leu | Gln | Pro | Thr | Val | |
| | | | 245 | | | | | | 250 | | | | | 255 | | |
| agg | act | tac | gtt | gaa | aac | aga | cct | aaa | tat | gct | gga | tat | agc | ttt | gag | 816 |
| Arg | Thr | Tyr | Val | Glu | Asn | Arg | Pro | Lys | Tyr | Ala | Gly | Tyr | Ser | Phe | Glu | |
| | | 260 | | | | | 265 | | | | | | 270 | | | |
| aaa | ctc | ttc | cct | gat | gtc | ctt | ttc | cca | gct | gac | tca | gaa | cac | aac | aaa | 864 |
| Lys | Leu | Phe | Pro | Asp | Val | Leu | Phe | Pro | Ala | Asp | Ser | Glu | His | Asn | Lys | |
| | | 275 | | | | | 280 | | | | | | 285 | | | |
| ctt | aaa | gcc | agt | cag | gca | agg | gat | ttg | tta | tcc | aaa | atg | ctg | gta | ata | 912 |
| Leu | Lys | Ala | Ser | Gln | Ala | Arg | Asp | Leu | Leu | Ser | Lys | Met | Leu | Val | Ile | |
| | 290 | | | | | 295 | | | | | 300 | | | | | |
| gat | gca | tct | aaa | agg | atc | tct | gta | gat | gaa | gct | ctc | caa | cac | ccg | tac | 960 |
| Asp | Ala | Ser | Lys | Arg | Ile | Ser | Val | Asp | Glu | Ala | Leu | Gln | His | Pro | Tyr | |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 | |
| atc | aat | gtc | tgg | tat | gat | cct | tct | gaa | gca | gaa | gct | cca | cca | cca | aag | 1008 |
| Ile | Asn | Val | Trp | Tyr | Asp | Pro | Ser | Glu | Ala | Glu | Ala | Pro | Pro | Pro | Lys | |
| | | | 325 | | | | | | 330 | | | | | 335 | | |
| atc | cct | gac | aag | cag | tta | gat | gaa | agg | gaa | cac | aca | ata | gaa | gag | tgg | 1056 |
| Ile | Pro | Asp | Lys | Gln | Leu | Asp | Glu | Arg | Glu | His | Thr | Ile | Glu | Glu | Trp | |
| | | 340 | | | | | 345 | | | | | | 350 | | | |
| aaa | gaa | ttg | ata | tat | aag | gaa | gtt | atg | gac | ttg | gag | gag | aga | acc | aag | 1104 |
| Lys | Glu | Leu | Ile | Tyr | Lys | Glu | Val | Met | Asp | Leu | Glu | Glu | Arg | Thr | Lys | |
| | | 355 | | | | | 360 | | | | | | 365 | | | |
| aat | gga | gtt | ata | cgg | ggg | cag | ccc | tct | cct | tta | gca | cag | gtg | cag | cag | 1152 |
| Asn | Gly | Val | Ile | Arg | Gly | Gln | Pro | Ser | Pro | Leu | Ala | Gln | Val | Gln | Gln | |
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| Trp | Asp | Pro | Pro | Val | Ala | Thr | Met | Val | Ser | Lys | Gly | Glu | Glu | Leu | Phe | |
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| acc | ggg | gtg | gtg | ccc | atc | ctg | gtc | gag | ctg | gac | ggc | gac | gta | aac | ggc | 1248 |
| Thr | Gly | Val | Val | Pro | Ile | Leu | Val | Glu | Leu | Asp | Gly | Asp | Val | Asn | Gly | |
| | | | 405 | | | | | | 410 | | | | | 415 | | |
| cac | aag | ttc | agc | gtg | tcc | ggc | gag | ggc | gag | ggc | gat | gcc | acc | tac | ggc | 1296 |
| His | Lys | Phe | Ser | Val | Ser | Gly | Glu | Gly | Glu | Gly | Asp | Ala | Thr | Tyr | Gly | |
| | | 420 | | | | | | 425 | | | | | 430 | | | |
| aag | ctg | acc | ctg | aag | ttc | atc | tgc | acc | acc | ggc | aag | ctg | ccc | gtg | ccc | 1344 |
| Lys | Leu | Thr | Leu | Lys | Phe | Ile | Cys | Thr | Thr | Gly | Lys | Leu | Pro | Val | Pro | |
| | | 435 | | | | | 440 | | | | | 445 | | | | |
| tgg | ccc | acc | ctc | gtg | acc | acc | ctg | acc | tac | ggc | gtg | cag | tgc | ttc | agc | 1392 |
| Trp | Pro | Thr | Leu | Val | Thr | Thr | Leu | Thr | Tyr | Gly | Val | Gln | Cys | Phe | Ser | |
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| cgc | tac | ccc | gac | cac | atg | aag | cag | cac | gac | ttc | ttc | aag | tcc | gcc | atg | 1440 |
| Arg | Tyr | Pro | Asp | His | Met | Lys | Gln | His | Asp | Phe | Phe | Lys | Ser | Ala | Met | |
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| ccc | gaa | ggc | tac | gtc | cag | gag | cgc | acc | atc | ttc | ttc | aag | gac | gac | ggc | 1488 |
| Pro | Glu | Gly | Tyr | Gln | Glu | Arg | Thr | Ile | Phe | Phe | Lys | Asp | Asp | Gly | Gly | |
| | | | 485 | | | | | | 490 | | | | | 495 | | |
| aac | tac | aag | acc | cgc | gcc | gag | gtg | aag | ttc | gag | ggc | gac | acc | ctg | gtg | 1536 |
| Asn | Tyr | Lys | Thr | Arg | Ala | Glu | Val | Lys | Phe | Glu | Gly | Asp | Thr | Leu | Val | |
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| Asn | Arg | Ile | Glu | Leu | Lys | Gly | Ile | Asp | Phe | Lys | Glu | Asp | Gly | Asn | Ile | | |
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| ctg | ggg | cac | aag | ctg | gag | tac | aac | tac | aac | agc | cac | aac | gtc | tat | atc | | 1632 |
| Leu | Gly | His | Lys | Leu | Glu | Tyr | Asn | Tyr | Asn | Ser | His | Asn | Val | Tyr | Ile | | |
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| Asn | Thr | Pro | Ile | Gly | Asp | Gly | Pro | Val | Leu | Leu | Pro | Asp | Asn | His | Tyr | | |
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| Leu | Ser | Thr | Gln | Ser | Ala | Leu | Ser | Lys | Asp | Pro | Asn | Glu | Lys | Arg | Asp | | |
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| Ser | Leu | Glu | Glu | Phe | Gln | Asp | Val | Tyr | Ile | Val | Met | Glu | Leu | Met | Asp | | |
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| Ala | Asn | Leu | Cys | Gln | Val | Ile | Gln | Met | Glu | Leu | Asp | His | Glu | Arg | Met | | |
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| | | | | | | | | | | | | | | | |
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| Gly | Thr | Ser | Phe | Met | Met | Thr | Pro | Tyr | Val | Val | Thr | Arg | Tyr | Tyr | Arg |
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| Lys | Leu | Phe | Pro | Asp | Val | Leu | Phe | Pro | Ala | Asp | Ser | Glu | His | Asn | Lys |
| | | 275 | | | | | 280 | | | | | 285 | | | |
| Leu | Lys | Ala | Ser | Gln | Ala | Arg | Asp | Leu | Leu | Ser | Lys | Met | Leu | Val | Ile |
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| Asp | Ala | Ser | Lys | Arg | Ile | Ser | Val | Asp | Glu | Ala | Leu | Gln | His | Pro | Tyr |
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| Ile | Asn | Val | Trp | Tyr | Asp | Pro | Ser | Glu | Ala | Glu | Ala | Pro | Pro | Pro | Lys |
| | | | | 325 | | | | | 330 | | | | | 335 | |
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| His | Lys | Phe | Ser | Val | Ser | Gly | Glu | Gly | Glu | Gly | Asp | Ala | Thr | Tyr | Gly |
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| Lys | Leu | Thr | Leu | Lys | Phe | Ile | Cys | Thr | Thr | Gly | Lys | Leu | Pro | Val | Pro |
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| Pro | Glu | Gly | Tyr | Val | Gln | Glu | Arg | Thr | Ile | Phe | Phe | Lys | Asp | Asp | Gly |
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| Leu | Gly | His | Lys | Leu | Glu | Tyr | Asn | Tyr | Asn | Ser | His | Asn | Val | Tyr | Ile |
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| Asn | Thr | Pro | Ile | Gly | Asp | Gly | Pro | Val | Leu | Leu | Pro | Asp | Asn | His | Tyr |
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| Leu | Ser | Thr | Gln | Ser | Ala | Leu | Ser | Lys | Asp | Pro | Asn | Glu | Lys | Arg | Asp |
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atc tgg gag gtg ccc gag cgt tac cag aac ctg tct cca gtg ggc tct      96
Ile Trp Glu Val Pro Glu Arg Tyr Gln Asn Leu Ser Pro Val Gly Ser
20      25      30
ggc gcc tat ggc tct gtg tgt gct gct ttt gac aca aaa acg ggg tta      144
Gly Ala Tyr Gly Ser Val Cys Ala Ala Phe Asp Thr Lys Thr Gly Leu
35      40      45
cgt gtg gca gtg aag aag ctc tcc aga cca ttt cag tcc atc att cat      192
Arg Val Ala Val Lys Lys Leu Ser Arg Pro Phe Gln Ser Ile Ile His
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gcg aaa aga acc tac aga gaa ctg cgg tta ctt aaa cat atg aaa cat      240
Ala Lys Arg Thr Tyr Arg Glu Leu Arg Leu Leu Lys His Met Lys His
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gaa aat gtg att ggt ctg ttg gac gtt ttt aca cct gca agg tct ctg      288
Glu Asn Val Ile Gly Leu Leu Asp Val Phe Thr Pro Ala Arg Ser Leu
85      90      95
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Glu Glu Phe Asn Asp Val Tyr Leu Val Thr His Leu Met Gly Ala Asp
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ctg aac aac att gtg aaa tgt cag aag ctt aca gat gac cat gtt cag      384
Leu Asn Asn Ile Val Lys Cys Gln Lys Leu Thr Asp Asp His Val Gln
115      120      125
ttc ctt atc tac caa att ctc cga ggt cta aag tat ata cat tca gct      432
Phe Leu Ile Tyr Gln Ile Leu Arg Gly Leu Lys Tyr Ile His Ser Ala
130      135      140
gac ata att cac agg gac cta aaa cct agt aat cta gct gtg aat gaa      480
Asp Ile Ile His Arg Asp Leu Lys Pro Ser Asn Leu Ala Val Asn Glu
145      150      155      160
gac tgt gag ctg aag att ctg gat ttt gga ctg gct cgg cac aca gat      528
Asp Cys Glu Leu Lys Ile Leu Asp Phe Gly Leu Ala Arg His Thr Asp
165      170      175
gat gaa atg aca ggc tac gtg gcc act agg tgg tac agg gct cct gag      576
Asp Glu Met Thr Gly Tyr Val Ala Thr Arg Trp Tyr Arg Ala Pro Glu
180      185      190
atc atg ctg aac tgg atg cat tac aac cag aca gtt gat att tgg tca      624
Ile Met Leu Asn Trp Met His Tyr Asn Gln Thr Val Asp Ile Trp Ser
195      200      205
gtg gga tgc ata atg gcc gag ctg ttg act gga aga aca ttg ttt cct      672
Val Gly Cys Ile Met Ala Glu Leu Leu Thr Gly Arg Thr Leu Phe Pro
210      215      220

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| 225 230 235 240 | |
| acc cca ggg gct gag ctt ttg aag aaa atc tcc tca gag tct gca aga | 768 |
| Thr Pro Gly Ala Glu Leu Leu Lys Lys Ile Ser Ser Glu Ser Ala Arg | |
| 245 250 255 | |
| aac tat att cag tct ttg act cag atg ccg aag atg aac ttt gcg aat | 816 |
| Asn Tyr Ile Gln Ser Leu Thr Gln Met Pro Lys Met Asn Phe Ala Asn | |
| 260 265 270 | |
| gta ttt att ggt gcc aat ccc ctg gct gtc gac ttg ctg gag aag atg | 864 |
| Val Phe Ile Gly Ala Asn Pro Leu Ala Val Asp Leu Leu Glu Lys Met | |
| 275 280 285 | |
| ctt gta ttg gac tca gat aag aga att aca gcg gcc caa gcc ctt gca | 912 |
| Leu Val Leu Asp Ser Asp Lys Arg Ile Thr Ala Ala Gln Ala Leu Ala | |
| 290 295 300 | |
| cat gcc tac ttt gct cag tac cac gat cct gat gat gaa cca gtg gcc | 960 |
| His Ala Tyr Phe Ala Gln Tyr His Asp Pro Asp Asp Glu Pro Val Ala | |
| 305 310 315 320 | |
| gat cct tat gat cag tcc ttt gaa agc agg gac ctc ctt ata gat gag | 1008 |
| Asp Pro Tyr Asp Gln Ser Phe Glu Ser Arg Asp Leu Leu Ile Asp Glu | |
| 325 330 335 | |
| tgg aaa agc ctg acc tat gat gaa gtc atc agc ttt gtg cca cca ccc | 1056 |
| Trp Lys Ser Leu Thr Tyr Asp Glu Val Ile Ser Phe Val Pro Pro Pro | |
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| Leu Asp Gln Glu Glu Met Glu Ser Glu Asp Pro Pro Val Ala Thr Met | |
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| Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val | |
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| gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc gag | 1200 |
| Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu | |
| 385 390 395 400 | |
| ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc tgc | 1248 |
| Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys | |
| 405 410 415 | |
| acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc ctg | 1296 |
| Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu | |
| 420 425 430 | |
| acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag cag | 1344 |
| Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln | |
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| His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg | |
| 450 455 460 | |
| acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag gtg | 1440 |
| Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val | |
| 465 470 475 480 | |
| aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc atc | 1488 |
| Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile | |
| 485 490 495 | |
| gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac aac | 1536 |
| Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn | |
| 500 505 510 | |
| tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac ggc | 1584 |
| Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly | |
| 515 520 525 | |
| atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc gtg | 1632 |
| Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val | |
| 530 535 540 | |
| cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc ccc | 1680 |
| Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro | |
| 545 550 555 560 | |

| | | | | | | | | | | | | | | | | |
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| gtg | ctg | ctg | ccc | gac | aac | cac | tac | ctg | agc | acc | cag | tcc | gcc | ctg | agc | 1728 |
| Val | Leu | Leu | Pro | Asp | Asn | His | Tyr | Leu | Ser | Thr | Gln | Ser | Ala | Leu | Ser | |
| | | | 565 | | | | | | 570 | | | | | 575 | | |
| aaa | gac | ccc | aac | gag | aag | cgc | gat | cac | atg | gtc | ctg | ctg | gag | ttc | gtg | 1776 |
| Lys | Asp | Pro | Asn | Glu | Lys | Arg | Asp | His | Met | Val | Leu | Leu | Glu | Phe | Val | |
| | | | 580 | | | | | 585 | | | | | 590 | | | |
| acc | gcc | gcc | ggg | atc | act | ctc | ggc | atg | gac | gag | ctg | tac | aag | taa | | 1821 |
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| Gly | Ala | Tyr | Gly | Ser | Val | Cys | Ala | Ala | Phe | Asp | Thr | Lys | Thr | Gly | Leu | |
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| Arg | Val | Ala | Val | Lys | Lys | Leu | Ser | Arg | Pro | Phe | Gln | Ser | Ile | Ile | His | |
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| Ala | Lys | Arg | Thr | Tyr | Arg | Glu | Leu | Arg | Leu | Leu | Lys | His | Met | Lys | His | |
| 65 | | | | 70 | | | | 75 | | | | | | 80 | | |
| Glu | Asn | Val | Ile | Gly | Leu | Leu | Asp | Val | Phe | Thr | Pro | Ala | Arg | Ser | Leu | |
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| Glu | Glu | Phe | Asn | Asp | Val | Tyr | Leu | Val | Thr | His | Leu | Met | Gly | Ala | Asp | |
| | | | 100 | | | | | 105 | | | | | 110 | | | |
| Leu | Asn | Asn | Ile | Val | Lys | Cys | Gln | Lys | Leu | Thr | Asp | Asp | His | Val | Gln | |
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| Phe | Leu | Ile | Tyr | Gln | Ile | Leu | Arg | Gly | Leu | Lys | Tyr | Ile | His | Ser | Ala | |
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| Asp | Ile | Ile | His | Arg | Asp | Leu | Lys | Pro | Ser | Asn | Leu | Ala | Val | Asn | Glu | |
| 145 | | | | 150 | | | | 155 | | | | | | 160 | | |
| Asp | Cys | Glu | Leu | Lys | Ile | Leu | Asp | Phe | Gly | Leu | Ala | Arg | His | Thr | Asp | |
| | | | 165 | | | | | 170 | | | | | | 175 | | |
| Asp | Glu | Met | Thr | Gly | Tyr | Val | Ala | Thr | Arg | Trp | Tyr | Arg | Ala | Pro | Glu | |
| | | | 180 | | | | | 185 | | | | | 190 | | | |
| Ile | Met | Leu | Asn | Trp | Met | His | Tyr | Asn | Gln | Thr | Val | Asp | Ile | Trp | Ser | |
| | | 195 | | | | 200 | | | | | | 205 | | | | |
| Val | Gly | Cys | Ile | Met | Ala | Glu | Leu | Leu | Thr | Gly | Arg | Thr | Leu | Phe | Pro | |
| | 210 | | | | 215 | | | | | | 220 | | | | | |
| Gly | Thr | Asp | His | Ile | Asp | Gln | Leu | Lys | Leu | Ile | Leu | Arg | Leu | Val | Gly | |
| 225 | | | | 230 | | | | | 235 | | | | | 240 | | |
| Thr | Pro | Gly | Ala | Glu | Leu | Leu | Lys | Lys | Ile | Ser | Ser | Glu | Ser | Ala | Arg | |
| | | | 245 | | | | | 250 | | | | | | 255 | | |
| Asn | Tyr | Ile | Gln | Ser | Leu | Thr | Gln | Met | Pro | Lys | Met | Asn | Phe | Ala | Asn | |
| | | 260 | | | | | 265 | | | | | | 270 | | | |
| Val | Phe | Ile | Gly | Ala | Asn | Pro | Leu | Ala | Val | Asp | Leu | Leu | Glu | Lys | Met | |
| | | 275 | | | | 280 | | | | | | 285 | | | | |
| Leu | Val | Leu | Asp | Ser | Asp | Lys | Arg | Ile | Thr | Ala | Ala | Gln | Ala | Leu | Ala | |

| | | |
|---|-----|-----|
| 290 | 295 | 300 |
| His Ala Tyr Phe Ala Gln Tyr His Asp Pro Asp Asp Glu Pro Val Ala | | |
| 305 | 310 | 315 |
| Asp Pro Tyr Asp Gln Ser Phe Glu Ser Arg Asp Leu Leu Ile Asp Glu | | 320 |
| | 325 | 330 |
| Trp Lys Ser Leu Thr Tyr Asp Glu Val Ile Ser Phe Val Pro Pro Pro | | 335 |
| | 340 | 345 |
| Leu Asp Gln Glu Glu Met Glu Ser Glu Asp Pro Pro Val Ala Thr Met | | 350 |
| | 355 | 360 |
| Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val | | 365 |
| | 370 | 375 |
| Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu | | 380 |
| 385 | 390 | 395 |
| Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys | | 400 |
| | 405 | 410 |
| Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu | | 415 |
| | 420 | 425 |
| Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln | | 430 |
| | 435 | 440 |
| His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg | | 445 |
| | 450 | 455 |
| Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val | | 460 |
| 465 | 470 | 475 |
| Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile | | 480 |
| | 485 | 490 |
| Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn | | 495 |
| | 500 | 505 |
| Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly | | 510 |
| | 515 | 520 |
| Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val | | 525 |
| | 530 | 535 |
| Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro | | 540 |
| 545 | 550 | 555 |
| Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser | | 560 |
| | 565 | 570 |
| Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val | | 575 |
| | 580 | 585 |
| Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys | | 590 |
| | 595 | 600 |

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<211> 2913

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<220>

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<220>

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| 1 5 10 15 | |
| gaa aga gaa gaa gat att gac ttg cac ttg ggt gac ata ttg act gtg | 96 |
| Glu Arg Glu Glu Asp Ile Asp Leu His Leu Gly Asp Ile Leu Thr Val | |
| 20 25 30 | |
| aat aaa ggg tcc tta gta gct ctt gga ttc agt gat gga cag gaa gcc | 144 |
| Asn Lys Gly Ser Leu Val Ala Leu Gly Phe Ser Asp Gly Gln Glu Ala | |
| 35 40 45 | |
| agg cct gaa gaa att ggc tgg tta aat ggc tat aat gaa acc aca ggg | 192 |
| Arg Pro Glu Glu Ile Gly Trp Leu Asn Gly Tyr Asn Glu Thr Thr Gly | |
| 50 55 60 | |
| gaa agg ggg gac ttt ccg gga act tac gta gaa tat att gga agg aaa | 240 |
| Glu Arg Gly Asp Phe Pro Gly Thr Tyr Val Glu Tyr Ile Gly Arg Lys | |
| 65 70 75 80 | |
| aaa atc tcg cct ccc aca cca aag ccc cgg cca cct cgg cct ctt cct | 288 |
| Lys Ile Ser Pro Pro Thr Pro Lys Pro Arg Pro Pro Arg Pro Leu Pro | |
| 85 90 95 | |
| gtt gca cca ggt tct tcg aaa act gaa gca gat gtt gaa caa caa gct | 336 |
| Val Ala Pro Gly Ser Ser Lys Thr Glu Ala Asp Val Glu Gln Ala | |
| 100 105 110 | |
| ttg act ctc ccg gat ctt gca gag cag ttt gcc cct cct gac att gcc | 384 |
| Leu Thr Leu Pro Asp Leu Ala Glu Gln Phe Ala Pro Pro Asp Ile Ala | |
| 115 120 125 | |
| ccg cct ctt ctt atc aag ctc gtg gaa gcc att gaa aag aaa ggt ctg | 432 |
| Pro Pro Leu Leu Ile Lys Leu Val Glu Ala Ile Glu Lys Lys Gly Leu | |
| 130 135 140 | |
| gaa tgt tca act cta tac aga aca cag agc tcc agc aac ctg gca gaa | 480 |
| Glu Cys Ser Thr Leu Tyr Arg Thr Gln Ser Ser Ser Asn Leu Ala Glu | |
| 145 150 155 160 | |
| tta cga cag ctt ctt gat tgt gat aca ccc tcc gtg gac ttg gaa atg | 528 |
| Leu Arg Gln Leu Asp Cys Asp Thr Ser Val Asp Leu Glu Met | |
| 165 170 175 | |
| atc gat gtg cac gtt ttg gct gac gct ttc aaa cgc tat ctc ctg gac | 576 |
| Ile Asp Val His Val Leu Ala Asp Ala Phe Lys Arg Tyr Leu Leu Asp | |
| 180 185 190 | |
| tta cca aat cct gtc att cca gca gcc gtt tac agt gaa atg att tct | 624 |
| Leu Pro Asn Pro Val Ile Pro Ala Ala Val Tyr Ser Glu Met Ile Ser | |
| 195 200 205 | |
| tta gct cca gaa gta caa agc tcc gaa gaa tat att cag cta ttg aag | 672 |
| Leu Ala Pro Glu Val Gln Ser Ser Glu Glu Tyr Ile Gln Leu Leu Lys | |
| 210 215 220 | |
| aag ctt att agg tcg cct agc ata cct cat cag tat tgg ctt acg ctt | 720 |
| Lys Leu Ile Arg Ser Pro Ser Ile Pro His Gln Tyr Trp Leu Thr Leu | |
| 225 230 235 240 | |
| cag tat ttg tta aaa cat ttc ttc aag ctc tct caa acc tcc agc aaa | 768 |
| Gln Tyr Leu Leu Lys His Phe Phe Lys Leu Ser Gln Thr Ser Ser Lys | |
| 245 250 255 | |
| aat ctg ttg aat gca aga gta ctc tct gaa att ttc agc cct atg ctt | 816 |
| Asn Leu Leu Asn Ala Arg Val Leu Ser Glu Ile Phe Ser Pro Met Leu | |
| 260 265 270 | |
| ttc aga ttc tca gca gcc agc tct gat aat act gaa aac ctc ata aaa | 864 |
| Phe Arg Phe Ser Ala Ala Ser Ser Asp Asn Thr Glu Asn Leu Ile Lys | |
| 275 280 285 | |
| gtt ata gaa att tta atc tca act gaa tgg aat gaa cga cag cct gca | 912 |
| Val Ile Glu Ile Leu Ile Ser Thr Glu Trp Asn Glu Arg Gln Pro Ala | |
| 290 295 300 | |
| cca gca ctg cct cct aaa cca cca aaa cct act act gta gcc aac aac | 960 |
| Pro Ala Leu Pro Pro Lys Pro Pro Lys Pro Thr Thr Val Ala Asn Asn | |
| 305 310 315 320 | |
| ggg atg aat aac aat atg tcc tta caa aat gct gaa tgg tac tgg gga | 1008 |
| Gly Met Asn Asn Asn Met Ser Leu Gln Asn Ala Glu Trp Tyr Trp Gly | |

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|--|--|--|-----|--|--|-----|--|
| | | | | | | | | | | | | | | 325 | | | 330 | | | | 335 | | | | |
| gat | atc | tcg | agg | gaa | gaa | gtg | aat | gaa | aaa | ctt | cga | gat | aca | gca | gac | 1056 | | | | | | | | | |
| Asp | Ile | Ser | Arg | Glu | Glu | Val | Asn | Glu | Lys | Leu | Arg | Asp | Thr | Ala | Asp | | | | | | | | | | |
| | | | | | | | | | | | | | | 340 | | | 345 | | | | 350 | | | | |
| ggg | acc | ttt | ttg | gta | cga | gat | gcg | tct | act | aaa | atg | cat | ggg | gat | tat | 1104 | | | | | | | | | |
| Gly | Thr | Phe | Leu | Val | Arg | Asp | Ala | Ser | Thr | Lys | Met | His | Gly | Asp | Tyr | | | | | | | | | | |
| | | | | | | | | | | | | | | 355 | | | 360 | | | | 365 | | | | |
| act | ctt | aca | cta | agg | aaa | ggg | gga | aat | aac | aaa | tta | atc | aaa | ata | ttt | 1152 | | | | | | | | | |
| Thr | Leu | Thr | Leu | Arg | Lys | Gly | Gly | Asn | Asn | Lys | Leu | Ile | Lys | Ile | Phe | | | | | | | | | | |
| | | | | | | | | | | | | | | 370 | | | 375 | | | | 380 | | | | |
| cat | cga | gat | ggg | aaa | tat | ggc | ttc | tct | gac | cca | tta | acc | ttc | agt | tct | 1200 | | | | | | | | | |
| His | Arg | Asp | Gly | Lys | Tyr | Gly | Phe | Ser | Asp | Pro | Leu | Thr | Phe | Ser | Ser | | | | | | | | | | |
| | | | | | | | | | | | | | | 385 | | | 395 | | | | 400 | | | | |
| gtg | ggt | gaa | tta | ata | aac | cac | tac | cgg | aat | gaa | tct | cta | gct | cag | tat | 1248 | | | | | | | | | |
| Val | Val | Glu | Leu | Ile | Asn | His | Tyr | Arg | Asn | Glu | Ser | Leu | Ala | Gln | Tyr | | | | | | | | | | |
| | | | | | | | | | | | | | | 405 | | | 410 | | | | 415 | | | | |
| aat | ccc | aaa | ttg | gat | gtg | aaa | tta | ctt | tat | cca | gta | tcc | aaa | tac | caa | 1296 | | | | | | | | | |
| Asn | Pro | Lys | Leu | Asp | Val | Lys | Leu | Leu | Tyr | Pro | Val | Ser | Lys | Tyr | Gln | | | | | | | | | | |
| | | | | | | | | | | | | | | 420 | | | 425 | | | | 430 | | | | |
| cag | gat | caa | ggt | gtc | aaa | gaa | gat | aat | att | gaa | gct | gta | ggg | aaa | aaa | 1344 | | | | | | | | | |
| Gln | Asp | Gln | Val | Val | Lys | Glu | Asp | Asn | Ile | Glu | Ala | Val | Gly | Lys | Lys | | | | | | | | | | |
| | | | | | | | | | | | | | | 435 | | | 440 | | | | 445 | | | | |
| tta | cat | gaa | tat | aac | act | cag | ttt | caa | gaa | aaa | agt | cga | gaa | tat | gat | 1392 | | | | | | | | | |
| Leu | His | Glu | Tyr | Asn | Thr | Gln | Phe | Gln | Glu | Lys | Ser | Arg | Glu | Tyr | Asp | | | | | | | | | | |
| | | | | | | | | | | | | | | 450 | | | 455 | | | | 460 | | | | |
| aga | tta | tat | gaa | gaa | tat | acc | cgc | aca | tcc | cag | gaa | atc | caa | atg | aaa | 1440 | | | | | | | | | |
| Arg | Leu | Tyr | Glu | Glu | Tyr | Thr | Arg | Thr | Ser | Gln | Glu | Ile | Gln | Met | Lys | | | | | | | | | | |
| | | | | | | | | | | | | | | 465 | | | 475 | | | | 480 | | | | |
| agg | aca | gct | att | gaa | gca | ttt | aat | gaa | acc | ata | aaa | ata | ttt | gaa | gaa | 1488 | | | | | | | | | |
| Arg | Thr | Ala | Ile | Glu | Ala | Phe | Asn | Glu | Thr | Ile | Lys | Ile | Phe | Glu | Glu | | | | | | | | | | |
| | | | | | | | | | | | | | | 485 | | | 490 | | | | 495 | | | | |
| cag | tgc | cag | acc | caa | gag | cgg | tac | agc | aaa | gaa | tac | ata | gaa | aag | ttt | 1536 | | | | | | | | | |
| Gln | Cys | Gln | Thr | Gln | Glu | Arg | Tyr | Ser | Lys | Glu | Tyr | Ile | Glu | Lys | Phe | | | | | | | | | | |
| | | | | | | | | | | | | | | 500 | | | 505 | | | | 510 | | | | |
| aaa | cgt | gaa | ggc | aat | gag | aaa | gaa | ata | caa | agg | att | atg | cat | aat | tat | 1584 | | | | | | | | | |
| Lys | Arg | Glu | Gly | Asn | Glu | Lys | Glu | Ile | Gln | Arg | Ile | Met | His | Asn | Tyr | | | | | | | | | | |
| | | | | | | | | | | | | | | 515 | | | 520 | | | | 525 | | | | |
| gat | aag | ttg | aag | tct | cga | atc | agt | gaa | att | att | gac | agt | aga | aga | aga | 1632 | | | | | | | | | |
| Asp | Lys | Leu | Lys | Ser | Arg | Ile | Ser | Glu | Ile | Ile | Asp | Ser | Arg | Arg | Arg | | | | | | | | | | |
| | | | | | | | | | | | | | | 530 | | | 535 | | | | 540 | | | | |
| ttg | gaa | gaa | gac | ttg | aag | aag | cag | gca | gct | gag | tat | cga | gaa | att | gac | 1680 | | | | | | | | | |
| Leu | Glu | Glu | Asp | Leu | Lys | Lys | Gln | Ala | Ala | Glu | Tyr | Arg | Glu | Ile | Asp | | | | | | | | | | |
| | | | | | | | | | | | | | | 545 | | | 550 | | | | 555 | | | 560 | |
| aaa | cgt | atg | aac | agc | att | aaa | cca | gac | ctt | atc | cag | ctg | aga | aag | acg | 1728 | | | | | | | | | |
| Lys | Arg | Met | Asn | Ser | Ile | Lys | Pro | Asp | Leu | Ile | Gln | Leu | Arg | Lys | Thr | | | | | | | | | | |
| | | | | | | | | | | | | | | 565 | | | 570 | | | | 575 | | | | |
| aga | gac | caa | tac | ttg | atg | tgg | ttg | act | caa | aaa | ggg | ggt | cgg | caa | aag | 1776 | | | | | | | | | |
| Arg | Asp | Gln | Tyr | Leu | Met | Trp | Leu | Thr | Gln | Lys | Gly | Val | Arg | Gln | Lys | | | | | | | | | | |
| | | | | | | | | | | | | | | 580 | | | 585 | | | | 590 | | | | |
| aag | ttg | aac | gag | tgg | ttg | ggc | aat | gaa | aac | act | gaa | gac | caa | tat | tca | 1824 | | | | | | | | | |
| Lys | Leu | Asn | Glu | Trp | Leu | Gly | Asn | Glu | Asn | Thr | Glu | Asp | Gln | Tyr | Ser | | | | | | | | | | |
| | | | | | | | | | | | | | | 595 | | | 600 | | | | 605 | | | | |
| ctg | gtg | gaa | gat | gat | gaa | gat | ttg | ccc | cat | cat | gat | gag | aag | aca | tgg | 1872 | | | | | | | | | |
| Leu | Val | Glu | Asp | Asp | Glu | Asp | Leu | Pro | His | His | Asp | Glu | Lys | Thr | Trp | | | | | | | | | | |
| | | | | | | | | | | | | | | 610 | | | 615 | | | | 620 | | | | |
| aat | ggt | gga | agc | agc | aac | cga | aac | aaa | gct | gaa | aac | ctg | ttg | cga | ggg | 1920 | | | | | | | | | |
| Asn | Val | Gly | Ser | Ser | Asn | Arg | Asn | Lys | Ala | Glu | Asn | Leu | Leu | Arg | Gly | | | | | | | | | | |
| | | | | | | | | | | | | | | 625 | | | 630 | | | | 635 | | | 640 | |
| aag | cga | gat | ggc | act | ttt | ctt | gtc | cgg | gag | agc | agt | aaa | cag | ggc | tgc | 1968 | | | | | | | | | |
| Lys | Arg | Asp | Gly | Thr | Phe | Leu | Val | Arg | Glu | Ser | Ser | Lys | Gln | Gly | Cys | | | | | | | | | | |
| | | | | | | | | | | | | | | 645 | | | 650 | | | | 655 | | | | |
| tat | gcc | tgc | tct | gta | gtg | gtg | gac | ggc | gaa | gta | aag | cat | tgt | gtc | ata | 2016 | | | | | | | | | |
| Tyr | Ala | Cys | Ser | Val | Val | Val | Asp | Gly | Glu | Val | Lys | His | Cys | Val | Ile | | | | | | | | | | |

<211> 970

<212> PRT

<213> Artificial Sequence

<220>

<223> p85alpha-EGFP fusion

<400> 67

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20      25      30
Asn Lys Gly Ser Leu Val Ala Leu Gly Phe Ser Asp Gly Gln Glu Ala
35      40      45
Arg Pro Glu Glu Ile Gly Trp Leu Asn Gly Tyr Asn Glu Thr Thr Gly
50      55      60
Glu Arg Gly Asp Phe Pro Gly Thr Tyr Val Glu Tyr Ile Gly Arg Lys
65      70      75      80
Lys Ile Ser Pro Pro Thr Pro Lys Pro Arg Pro Pro Arg Pro Leu Pro
85      90      95
Val Ala Pro Gly Ser Ser Lys Thr Glu Ala Asp Val Glu Gln Gln Ala
100     105     110
Leu Thr Leu Pro Asp Leu Ala Glu Gln Phe Ala Pro Pro Asp Ile Ala
115     120     125
Pro Pro Leu Leu Ile Lys Leu Val Glu Ala Ile Glu Lys Lys Gly Leu
130     135     140
Glu Cys Ser Thr Leu Tyr Arg Thr Gln Ser Ser Ser Asn Leu Ala Glu
145     150     155     160
Leu Arg Gln Leu Leu Asp Cys Asp Thr Pro Ser Val Asp Leu Glu Met
165     170     175
Ile Asp Val His Val Leu Ala Asp Ala Phe Lys Arg Tyr Leu Leu Asp
180     185     190
Leu Pro Asn Pro Val Ile Pro Ala Ala Val Tyr Ser Glu Met Ile Ser
195     200     205
Leu Ala Pro Glu Val Gln Ser Ser Glu Glu Tyr Ile Gln Leu Leu Lys
210     215     220
Lys Leu Ile Arg Ser Pro Ser Ile Pro His Gln Tyr Trp Leu Thr Leu
225     230     235     240
Gln Tyr Leu Leu Lys His Phe Phe Lys Leu Ser Gln Thr Ser Ser Lys
245     250     255
Asn Leu Leu Asn Ala Arg Val Leu Ser Glu Ile Phe Ser Pro Met Leu
260     265     270
Phe Arg Phe Ser Ala Ala Ser Ser Asp Asn Thr Glu Asn Leu Ile Lys
275     280     285
Val Ile Glu Ile Leu Ile Ser Thr Glu Trp Asn Glu Arg Gln Pro Ala
290     295     300
Pro Ala Leu Pro Pro Lys Pro Pro Lys Pro Thr Thr Val Ala Asn Asn
305     310     315     320
Gly Met Asn Asn Asn Met Ser Leu Gln Asn Ala Glu Trp Tyr Trp Gly
325     330     335
Asp Ile Ser Arg Glu Glu Val Asn Glu Lys Leu Arg Asp Thr Ala Asp
340     345     350
Gly Thr Phe Leu Val Arg Asp Ala Ser Thr Lys Met His Gly Asp Tyr
355     360     365
Thr Leu Thr Leu Arg Lys Gly Gly Asn Asn Lys Leu Ile Lys Ile Phe
370     375     380
His Arg Asp Gly Lys Tyr Gly Phe Ser Asp Pro Leu Thr Phe Ser Ser
385     390     395     400
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Val Val Glu Leu Ile Asn His Tyr Arg Asn Glu Ser Leu Ala Gln Tyr
405 410 415
Asn Pro Lys Leu Asp Val Lys Leu Leu Tyr Pro Val Ser Lys Tyr Gln
420 425 430
Gln Asp Gln Val Val Lys Glu Asp Asn Ile Glu Ala Val Gly Lys Lys
435 440 445
Leu His Glu Tyr Asn Thr Gln Phe Gln Glu Lys Ser Arg Glu Tyr Asp
450 455 460
Arg Leu Tyr Glu Glu Tyr Thr Arg Thr Ser Gln Glu Ile Gln Met Lys
465 470 475 480
Arg Thr Ala Ile Glu Ala Phe Asn Glu Thr Ile Lys Ile Phe Glu Glu
485 490 495
Gln Cys Gln Thr Gln Glu Arg Tyr Ser Lys Glu Tyr Ile Glu Lys Phe
500 505 510
Lys Arg Glu Gly Asn Glu Lys Glu Ile Gln Arg Ile Met His Asn Tyr
515 520 525
Asp Lys Leu Lys Ser Arg Ile Ser Glu Ile Ile Asp Ser Arg Arg Arg
530 535 540
Leu Glu Glu Asp Leu Lys Lys Gln Ala Ala Glu Tyr Arg Glu Ile Asp
545 550 555 560
Lys Arg Met Asn Ser Ile Lys Pro Asp Leu Ile Gln Leu Arg Lys Thr
565 570 575
Arg Asp Gln Tyr Leu Met Trp Leu Thr Gln Lys Gly Val Arg Gln Lys
580 585 590
Lys Leu Asn Glu Trp Leu Gly Asn Glu Asn Thr Glu Asp Gln Tyr Ser
595 600 605
Leu Val Glu Asp Asp Glu Asp Leu Pro His His Asp Glu Lys Thr Trp
610 615 620
Asn Val Gly Ser Ser Asn Arg Asn Lys Ala Glu Asn Leu Leu Arg Gly
625 630 635 640
Lys Arg Asp Gly Thr Phe Leu Val Arg Glu Ser Ser Lys Gln Gly Cys
645 650 655
Tyr Ala Cys Ser Val Val Val Asp Gly Glu Val Lys His Cys Val Ile
660 665 670
Asn Lys Thr Ala Thr Gly Tyr Gly Phe Ala Glu Pro Tyr Asn Leu Tyr
675 680 685
Ser Ser Leu Lys Glu Leu Val Leu His Tyr Gln His Thr Ser Leu Val
690 695 700
Gln His Asn Asp Ser Leu Asn Val Thr Leu Ala Tyr Pro Val Tyr Ala
705 710 715 720
Gln Gln Arg Arg Gln Asp Pro Pro Val Ala Thr Met Val Ser Lys Gly
725 730 735
Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu Leu Asp Gly
740 745 750
Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly Glu Gly Asp
755 760 765
Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys
770 775 780
Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr Tyr Gly Val
785 790 795 800
Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln His Asp Phe Phe
805 810 815
Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe
820 825 830
Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu Gly
835 840 845
Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu
850 855 860
Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser His
865 870 875 880
Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly Ile Lys Val Asn
885 890 895
Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val Gln Leu Ala Asp

| | | | | |
|---|-----|-----|-----|------|
| 145 | 150 | 155 | 160 | |
| ctg gac ctc atc tac cgg gac ctg aag ccc gag aat ctt ctc atc gac | | | | 528 |
| Leu Asp Leu Ile Tyr Arg Asp Leu Lys Pro Glu Asn Leu Leu Ile Asp | | | | |
| | 165 | 170 | 175 | |
| cag cag ggc tat att cag gtg aca gac ttc ggt ttt gcc aag cgt gtg | | | | 576 |
| Gln Gln Gly Tyr Ile Gln Val Thr Asp Phe Gly Phe Ala Lys Arg Val | | | | |
| | 180 | 185 | 190 | |
| aaa ggc cgt act tgg acc ttg tgt ggg acc cct gag tac ttg gcc ccc | | | | 624 |
| Lys Gly Arg Thr Trp Thr Leu Cys Gly Thr Pro Glu Tyr Leu Ala Pro | | | | |
| | 195 | 200 | 205 | |
| gag att atc ctg agc aaa ggc tac aac aag gct gtg gac tgg tgg gct | | | | 672 |
| Glu Ile Ile Leu Ser Lys Gly Tyr Asn Lys Ala Val Asp Trp Trp Ala | | | | |
| | 210 | 215 | 220 | |
| ctc gga gtc ctc atc tac gag atg gct gct ggt tac cca ccc ttc ttc | | | | 720 |
| Leu Gly Val Leu Ile Tyr Glu Met Ala Ala Gly Tyr Pro Pro Phe Phe | | | | |
| | 225 | 230 | 235 | |
| gct gac cag cct atc cag atc tat gag aaa atc gtc tct ggg aag gtg | | | | 768 |
| Ala Asp Gln Pro Ile Gln Ile Tyr Glu Lys Ile Val Ser Gly Lys Val | | | | |
| | 245 | 250 | 255 | |
| cgg ttc cca tcc cac ttc agc tct gac ttg aag gac ctg ctg cgg aac | | | | 816 |
| Arg Phe Pro Ser His Phe Ser Ser Asp Leu Lys Asp Leu Leu Arg Asn | | | | |
| | 260 | 265 | 270 | |
| ctt ctg caa gtg gat cta acc aag cgc ttt gga aac ctc aag gac ggg | | | | 864 |
| Leu Leu Gln Val Asp Leu Thr Lys Arg Phe Gly Asn Leu Lys Asp Gly | | | | |
| | 275 | 280 | 285 | |
| gtc aat gac atc aag aac cac aag tgg ttt gcc acg act gac tgg att | | | | 912 |
| Val Asn Asp Ile Lys Asn His Lys Trp Phe Ala Thr Thr Asp Trp Ile | | | | |
| | 290 | 295 | 300 | |
| gcc atc tat cag aga aag gtg gaa gct ccc ttc ata cca aag ttt aaa | | | | 960 |
| Ala Ile Tyr Gln Arg Lys Val Glu Ala Pro Phe Ile Pro Lys Phe Lys | | | | |
| | 305 | 310 | 315 | |
| ggc cct ggg gac acg agt aac ttt gac gac tat gag gag gaa gag atc | | | | 1008 |
| Gly Pro Gly Asp Thr Ser Asn Phe Asp Asp Tyr Glu Glu Glu Ile | | | | |
| | 325 | 330 | 335 | |
| cgg gtc tcc atc aat gag aag tgt ggc aag gag ttt act gag ttt ggg | | | | 1056 |
| Arg Val Ser Ile Asn Glu Lys Cys Gly Lys Glu Phe Thr Glu Phe Gly | | | | |
| | 340 | 345 | 350 | |
| cgc gcc atg agt aaa gga gaa gaa ctt ttc act gga gtt gtc cca att | | | | 1104 |
| Arg Ala Met Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile | | | | |
| | 355 | 360 | 365 | |
| ctt gtt gaa tta gat ggc gat gtt aat ggg caa aaa ttc tct gtt agt | | | | 1152 |
| Leu Val Glu Leu Asp Gly Asp Val Asn Gly Gln Lys Phe Ser Val Ser | | | | |
| | 370 | 375 | 380 | |
| gga gag ggt gaa ggt gat gca aca tac gga aaa ctt acc ctt aaa ttt | | | | 1200 |
| Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe | | | | |
| | 385 | 390 | 395 | |
| att tgc act act ggg aag cta cct gtt cca tgg cca acg ctt gtc act | | | | 1248 |
| Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr | | | | |
| | 405 | 410 | 415 | |
| act ctc act tat ggt gtt caa tgc ttt tct aga tac cca gat cat atg | | | | 1296 |
| Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met | | | | |
| | 420 | 425 | 430 | |
| aaa cag cat gac ttt ttc aag agt gcc atg ccc gaa ggt tat gta cag | | | | 1344 |
| Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln | | | | |
| | 435 | 440 | 445 | |
| gaa aga act ata ttt tac aaa gat gac ggg aac tac aag aca cgt gct | | | | 1392 |
| Glu Arg Thr Ile Phe Tyr Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala | | | | |
| | 450 | 455 | 460 | |
| gaa gtc aag ttt gaa ggt gat acc ctt gtt aat aga atc gag tta aaa | | | | 1440 |
| Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys | | | | |
| | 465 | 470 | 475 | |
| ggt att gat ttt aaa gaa gat gga aac att ctt gga cac aaa atg gaa | | | | 1488 |
| Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Met Glu | | | | |

| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|------|
| | | | | 485 | | | | 490 | | | | | 495 | | | | |
| tac | aat | tat | aac | tca | cat | aat | gta | tac | atc | atg | gca | gac | aaa | cca | aag | | 1536 |
| Tyr | Asn | Tyr | Asn | Ser | His | Asn | Val | Tyr | Ile | Met | Ala | Asp | Lys | Pro | Lys | | |
| | | | 500 | | | | | 505 | | | | | 510 | | | | |
| aat | ggc | atc | aaa | gtt | aac | ttc | aaa | att | aga | cac | aac | att | aaa | gat | gga | | 1584 |
| Asn | Gly | Ile | Lys | Val | Asn | Phe | Lys | Ile | Arg | His | Asn | Ile | Lys | Asp | Gly | | |
| | | 515 | | | | | 520 | | | | | 525 | | | | | |
| agc | gtt | caa | tta | gca | gac | cat | tat | caa | caa | aat | act | cca | att | ggc | gat | | 1632 |
| Ser | Val | Gln | Leu | Ala | Asp | His | Tyr | Gln | Gln | Asn | Thr | Pro | Ile | Gly | Asp | | |
| | 530 | | | | | 535 | | | | | 540 | | | | | | |
| ggc | cct | gtc | ctt | tta | cca | gac | aac | cat | tac | ctg | tcc | acg | caa | tct | gcc | | 1680 |
| Gly | Pro | Val | Leu | Leu | Pro | Asp | Asn | His | Tyr | Leu | Ser | Thr | Gln | Ser | Ala | | |
| 545 | | | | | 550 | | | | 555 | | | | 560 | | | | |
| ctt | tcc | aaa | gat | ccc | aac | gaa | aag | aga | gat | cac | atg | atc | ctt | ctt | gag | | 1728 |
| Leu | Ser | Lys | Asp | Pro | Asn | Glu | Lys | Arg | Asp | His | Met | Ile | Leu | Leu | Glu | | |
| | | | 565 | | | | | 570 | | | | | 575 | | | | |
| ttt | gta | aca | gct | ggg | att | aca | cat | ggc | atg | gat | gaa | cta | tac | aaa | | | 1776 |
| Phe | Val | Thr | Ala | Ala | Gly | Ile | Thr | His | Gly | Met | Asp | Glu | Leu | Tyr | Lys | | |
| | | | 580 | | | | 585 | | | | | 590 | | | | | |
| cct | cag | gag | taa | | | | | | | | | | | | | | 1788 |
| Pro | Gln | Glu | | | | | | | | | | | | | | | |
| | | 595 | | | | | | | | | | | | | | | |

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<211> 595

<212> PRT

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<220>

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<400> 69

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| Met | Gly | Asn | Ala | Ala | Ala | Ala | Lys | Lys | Gly | Ser | Glu | Gln | Glu | Ser | Val | | |
| 1 | | | 5 | | | | | | 10 | | | | | 15 | | | |
| Lys | Glu | Phe | Leu | Ala | Lys | Ala | Lys | Glu | Asp | Phe | Leu | Lys | Lys | Trp | Glu | | |
| | | | 20 | | | | | 25 | | | | | 30 | | | | |
| Asp | Pro | Ser | Gln | Asn | Thr | Ala | Gln | Leu | Asp | Gln | Phe | Asp | Arg | Ile | Lys | | |
| | | 35 | | | | | 40 | | | | | 45 | | | | | |
| Thr | Leu | Gly | Thr | Gly | Ser | Phe | Gly | Arg | Val | Met | Leu | Val | Lys | His | Lys | | |
| | 50 | | | | | 55 | | | 60 | | | | | | | | |
| Glu | Ser | Gly | Asn | His | Tyr | Ala | Met | Lys | Ile | Leu | Asp | Lys | Gln | Lys | Val | | |
| 65 | | | | | 70 | | | | 75 | | | | 80 | | | | |
| Val | Lys | Leu | Lys | Gln | Ile | Glu | His | Thr | Leu | Asn | Glu | Lys | Arg | Ile | Leu | | |
| | | | 85 | | | | | | 90 | | | | 95 | | | | |
| Gln | Ala | Val | Asn | Phe | Pro | Phe | Leu | Val | Lys | Leu | Glu | Phe | Ser | Phe | Lys | | |
| | | | 100 | | | | | 105 | | | | | 110 | | | | |
| Asp | Asn | Ser | Asn | Leu | Tyr | Met | Val | Met | Glu | Tyr | Val | Ala | Gly | Gly | Glu | | |
| | | 115 | | | | | 120 | | | | | 125 | | | | | |
| Met | Phe | Ser | His | Leu | Arg | Arg | Ile | Gly | Arg | Phe | Ser | Glu | Pro | His | Ala | | |
| | 130 | | | | | 135 | | | | | 140 | | | | | | |
| Arg | Phe | Tyr | Ala | Ala | Gln | Ile | Val | Leu | Thr | Phe | Glu | Tyr | Leu | His | Ser | | |
| 145 | | | | | 150 | | | | | 155 | | | | 160 | | | |
| Leu | Asp | Leu | Ile | Tyr | Arg | Asp | Leu | Lys | Pro | Glu | Asn | Leu | Leu | Ile | Asp | | |
| | | | 165 | | | | | 170 | | | | | 175 | | | | |
| Gln | Gln | Gly | Tyr | Ile | Gln | Val | Thr | Asp | Phe | Gly | Phe | Ala | Lys | Arg | Val | | |
| | | | 180 | | | | | 185 | | | | | 190 | | | | |

Lys Gly Arg Thr Trp Thr Leu Cys Gly Thr Pro Glu Tyr Leu Ala Pro
 195 200 205
 Glu Ile Ile Leu Ser Lys Gly Tyr Asn Lys Ala Val Asp Trp Trp Ala
 210 215 220
 Leu Gly Val Leu Ile Tyr Glu Met Ala Ala Gly Tyr Pro Pro Phe Phe
 225 230 235 240
 Ala Asp Gln Pro Ile Gln Ile Tyr Glu Lys Ile Val Ser Gly Lys Val
 245 250 255
 Arg Phe Pro Ser His Phe Ser Ser Asp Leu Lys Asp Leu Leu Arg Asn
 260 265 270
 Leu Leu Gln Val Asp Leu Thr Lys Arg Phe Gly Asn Leu Lys Asp Gly
 275 280 285
 Val Asn Asp Ile Lys Asn His Lys Trp Phe Ala Thr Thr Asp Trp Ile
 290 295 300
 Ala Ile Tyr Gln Arg Lys Val Glu Ala Pro Phe Ile Pro Lys Phe Lys
 305 310 315 320
 Gly Pro Gly Asp Thr Ser Asn Phe Asp Asp Tyr Glu Glu Glu Glu Ile
 325 330 335
 Arg Val Ser Ile Asn Glu Lys Cys Gly Lys Glu Phe Thr Glu Phe Gly
 340 345 350
 Arg Ala Met Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile
 355 360 365
 Leu Val Glu Leu Asp Gly Asp Val Asn Gly Gln Lys Phe Ser Val Ser
 370 375 380
 Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe
 385 390 395 400
 Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr
 405 410 415
 Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met
 420 425 430
 Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln
 435 440 445
 Glu Arg Thr Ile Phe Tyr Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala
 450 455 460
 Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys
 465 470 475 480
 Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Met Glu
 485 490 495
 Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Pro Lys
 500 505 510
 Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Lys Asp Gly
 515 520 525
 Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp
 530 535 540
 Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala
 545 550 555 560
 Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Ile Leu Leu Glu
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 Phe Val Thr Ala Ala Gly Ile Thr His Gly Met Asp Glu Leu Tyr Lys
 580 585 590
 Pro Gln Glu
 595

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<220>

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gag tac atc aag acc tgg cgg cca cgc tac ttc ctc ctc aag aat gat      96
Glu Tyr Ile Lys Thr Trp Arg Pro Arg Tyr Phe Leu Leu Lys Asn Asp
          20          25          30
ggc acc ttc att ggc tac aag gag cgg ccg cag gat gtg gac caa cgt      144
Gly Thr Phe Ile Gly Tyr Lys Glu Arg Pro Gln Asp Val Asp Gln Arg
          35          40          45
gag gct ccc ctc aac aac ttc tct gtg gcg cag tgc cag ctg atg aag      192
Glu Ala Pro Leu Asn Asn Phe Ser Val Ala Gln Cys Gln Leu Met Lys
          50          55          60
acg gag cgg ccc cgg ccc aac acc ttc atc atc cgc tgc ctg cag tgg      240
Thr Glu Arg Pro Arg Pro Asn Thr Phe Ile Ile Arg Cys Leu Gln Trp
          65          70          75          80
acc act gtc atc gaa cgc acc ttc cat gtg gag act cct gag gag cgg      288
Thr Thr Val Ile Glu Arg Thr Phe His Val Glu Thr Pro Glu Glu Arg
          85          90          95
gag gag tgg aca acc gcc atc cag act gtg gct gac ggc ctc aag aag      336
Glu Glu Trp Thr Thr Ala Ile Gln Thr Val Ala Asp Gly Leu Lys Lys
          100          105          110
cag gag gag gag gag atg gac ttc cgg tcg ggc tca ccc agt gac aac      384
Gln Glu Glu Glu Glu Met Asp Phe Arg Ser Gly Ser Pro Ser Asp Asn
          115          120          125
tca ggg gct gaa gag atg gag gtg tcc ctg gcc aag ccc aag cac cgc      432
Ser Gly Ala Glu Glu Met Glu Val Ser Leu Ala Lys Pro Lys His Arg
          130          135          140
gtg acc atg aac gag ttt gag tac ctg aag ctg ctg ggc aag ggc act      480
Val Thr Met Asn Glu Phe Glu Tyr Leu Lys Leu Leu Gly Lys Gly Thr
          145          150          155          160
ttc ggc aag gtg atc ctg gtg aag gag aag gcc aca ggc cgc tac tac      528
Phe Gly Lys Val Ile Leu Val Lys Glu Lys Ala Thr Gly Arg Tyr Tyr
          165          170          175
gcc atg aag atc ctc aag aag gaa gtc atc gtg gcc aag gac gag gtg      576
Ala Met Lys Ile Leu Lys Lys Glu Val Ile Val Ala Lys Asp Glu Val
          180          185          190
gcc cac aca ctc acc gag aac cgc gtc ctg cag aac tcc agg cac ccc      624
Ala His Thr Leu Thr Glu Asn Arg Val Leu Gln Asn Ser Arg His Pro
          195          200          205
ttc ctc aca gcc ctg aag tac tct ttc cag acc cac gac cgc ctc tgc      672
Phe Leu Thr Ala Leu Lys Tyr Ser Phe Gln Thr His Asp Arg Leu Cys
          210          215          220
ttt gtc atg gag tac gcc aac ggg ggc gag ctg ttc ttc cac ctg tcc      720
Phe Val Met Glu Tyr Ala Asn Gly Gly Glu Leu Phe Phe His Leu Ser
          225          230          235          240
cgg gaa cgt gtg ttc tcc gag gac cgg gcc cgc ttc tat ggc gct gag      768
Arg Glu Arg Val Phe Ser Glu Asp Arg Ala Arg Phe Tyr Gly Ala Glu
          245          250          255
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| | |
|---|------|
| att gtg tca gcc ctg gac tac ctg cac tcg gag aag aac gtg gtg tac | 816 |
| Ile Val Ser Ala Leu Asp Tyr Leu His Ser Glu Lys Asn Val Val Tyr | |
| 260 265 270 | |
| cgg gac ctc aag ctg gag aac ctc atg ctg gac aag gac ggg cac att | 864 |
| Arg Asp Leu Lys Leu Glu Asn Leu Met Leu Asp Lys Asp Gly His Ile | |
| 275 280 285 | |
| aag atc aca gac ttc ggg ctg tgc aag gag ggg atc aag gac ggt gcc | 912 |
| Lys Ile Thr Asp Phe Gly Leu Cys Lys Glu Gly Ile Lys Asp Gly Ala | |
| 290 295 300 | |
| acc atg aag acc ttt tgc ggc aca cct gag tac ctg gcc ccc gag gtg | 960 |
| Thr Met Lys Thr Phe Cys Gly Thr Pro Glu Tyr Leu Ala Pro Glu Val | |
| 305 310 315 320 | |
| ctg gag gac aat gac tac ggc cgt gca gtg gac tgg tgg ggg ctg ggc | 1008 |
| Leu Glu Asp Asn Asp Tyr Gly Arg Ala Val Asp Trp Trp Gly Leu Gly | |
| 325 330 335 | |
| gtg gtc atg tac gag atg atg tgc ggt cgc ctg ccc ttc tac aac cag | 1056 |
| Val Val Met Tyr Glu Met Met Cys Gly Arg Leu Pro Phe Tyr Asn Gln | |
| 340 345 350 | |
| gac cat gag aag ctt ttt gag ctc atc ctc atg gag gag atc cgc ttc | 1104 |
| Asp His Glu Lys Leu Phe Glu Leu Ile Leu Met Glu Glu Ile Arg Phe | |
| 355 360 365 | |
| ccg cgc acg ctt ggt ccc gag gcc aag tcc ttg ctt tca ggg ctg ctc | 1152 |
| Pro Arg Thr Leu Gly Pro Glu Ala Lys Ser Leu Leu Ser Gly Leu Leu | |
| 370 375 380 | |
| aag aag gac ccc aag cag agg ctt ggc ggg ggc tcc gag gac gcc aag | 1200 |
| Lys Lys Asp Pro Lys Gln Arg Leu Gly Gly Gly Ser Glu Asp Ala Lys | |
| 385 390 395 400 | |
| gag atc atg cag cat cgc ttc ttt gcc ggt atc gtg tgg cag cac gtg | 1248 |
| Glu Ile Met Gln His Arg Phe Phe Ala Gly Ile Val Trp Gln His Val | |
| 405 410 415 | |
| tac gag aag aag ctc agc cca ccc ttc aag ccc cag gtc acg tcg gag | 1296 |
| Tyr Glu Lys Lys Leu Ser Pro Pro Phe Lys Pro Gln Val Thr Ser Glu | |
| 420 425 430 | |
| act gac acc agg tat ttt gat gag gag ttc acg gcc cag atg atc acc | 1344 |
| Thr Asp Thr Arg Tyr Phe Asp Glu Glu Phe Thr Ala Gln Met Ile Thr | |
| 435 440 445 | |
| atc aca cca cct gac caa gat gac agc atg gag tgt gtg gac agc gag | 1392 |
| Ile Thr Pro Pro Asp Gln Asp Asp Ser Met Glu Cys Val Asp Ser Glu | |
| 450 455 460 | |
| cgc agg ccc cac ttc ccc cag ttc tcc tac tcg gcc agc agc acg gcc | 1440 |
| Arg Arg Pro His Phe Pro Gln Phe Ser Tyr Ser Ala Ser Ser Thr Ala | |
| 465 470 475 480 | |
| tcg gat cca ccg gtc gcc acc atg gtg agc aag ggc gag gag ctg ttc | 1488 |
| Ser Asp Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe | |
| 485 490 495 | |
| acc ggg gtg gtg ccc atc ctg gtc gag ctg gac ggc gac gta aac ggc | 1536 |
| Thr Gly Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly | |
| 500 505 510 | |
| cac aag ttc agc gtg tcc ggc gag ggc gag ggc gat gcc acc tac ggc | 1584 |
| His Lys Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly | |
| 515 520 525 | |
| aag ctg acc ctg aag ttc atc tgc acc acc ggc aag ctg ccc gtg ccc | 1632 |
| Lys Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro | |
| 530 535 540 | |
| tgg ccc acc ctc gtg acc acc ctg acc tac ggc gtg cag tgc ttc agc | 1680 |
| Trp Pro Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser | |
| 545 550 555 560 | |
| cgc tac ccc gac cac atg aag cag cac gac ttc ttc aag tcc gcc atg | 1728 |
| Arg Tyr Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met | |
| 565 570 575 | |
| ccc gaa ggc tac gtc cag gag cgc acc atc ttc ttc aag gac gac ggc | 1776 |
| Pro Glu Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly | |
| 580 585 590 | |

| | |
|---|------|
| aac tac aag acc cgc gcc gag gtg aag ttc gag ggc gac acc ctg gtg | 1824 |
| Asn Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val | |
| 595 600 605 | |
| aac cgc atc gag ctg aag ggc atc gac ttc aag gag gac ggc aac atc | 1872 |
| Asn Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile | |
| 610 615 620 | |
| ctg ggg cac aag ctg gag tac aac tac aac agc cac aac gtc tat atc | 1920 |
| Leu Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile | |
| 625 630 635 640 | |
| atg gcc gac aag cag aag aac ggc atc aag gtg aac ttc aag atc cgc | 1968 |
| Met Ala Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg | |
| 645 650 655 | |
| cac aac atc gag gac ggc agc gtg cag ctc gcc gac cac tac cag cag | 2016 |
| His Asn Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln | |
| 660 665 670 | |
| aac acc ccc atc ggc gac ggc ccc gtg ctg ctg ccc gac aac cac tac | 2064 |
| Asn Thr Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr | |
| 675 680 685 | |
| ctg agc acc cag tcc gcc ctg agc aaa gac ccc aac gag aag cgc gat | 2112 |
| Leu Ser Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp | |
| 690 695 700 | |
| cac atg gtc ctg ctg gag ttc gtg acc gcc gcc ggc atc act ctc ggc | 2160 |
| His Met Val Leu Leu Glu Phe Val Thr Ala Ala Gly Ile Thr Leu Gly | |
| 705 710 715 720 | |
| atg gac gag ctg tac aag taa | 2181 |
| Met Asp Glu Leu Tyr Lys | |
| 725 | |

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<211> 726

<212> PRT

<213> Artificial Sequence

<220>

<223> PKB-EGFP fusion

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| 20 25 30 | |
| Gly Thr Phe Ile Gly Tyr Lys Glu Arg Pro Gln Asp Val Asp Gln Arg | |
| 35 40 45 | |
| Glu Ala Pro Leu Asn Asn Phe Ser Val Ala Gln Cys Gln Leu Met Lys | |
| 50 55 60 | |
| Thr Glu Arg Pro Arg Pro Asn Thr Phe Ile Ile Arg Cys Leu Gln Trp | |
| 65 70 75 80 | |
| Thr Thr Val Ile Glu Arg Thr Phe His Val Glu Thr Pro Glu Glu Arg | |
| 85 90 95 | |
| Glu Glu Trp Thr Thr Ala Ile Gln Thr Val Ala Asp Gly Leu Lys Lys | |
| 100 105 110 | |
| Gln Glu Glu Glu Glu Met Asp Phe Arg Ser Gly Ser Pro Ser Asp Asn | |
| 115 120 125 | |
| Ser Gly Ala Glu Glu Met Glu Val Ser Leu Ala Lys Pro Lys His Arg | |
| 130 135 140 | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Thr | Met | Asn | Glu | Phe | Glu | Tyr | Leu | Lys | Leu | Leu | Gly | Lys | Gly | Thr |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 |
| Phe | Gly | Lys | Val | Ile | Leu | Val | Lys | Glu | Lys | Ala | Thr | Gly | Arg | Tyr | Tyr |
| | | | | 165 | | | | | 170 | | | | | 175 | |
| Ala | Met | Lys | Ile | Leu | Lys | Lys | Glu | Val | Ile | Val | Ala | Lys | Asp | Glu | Val |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Ala | His | Thr | Leu | Thr | Glu | Asn | Arg | Val | Leu | Gln | Asn | Ser | Arg | His | Pro |
| | 195 | | | | | | 200 | | | | | 205 | | | |
| Phe | Leu | Thr | Ala | Leu | Lys | Tyr | Ser | Phe | Gln | Thr | His | Asp | Arg | Leu | Cys |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Phe | Val | Met | Glu | Tyr | Ala | Asn | Gly | Gly | Glu | Leu | Phe | Phe | His | Leu | Ser |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| Arg | Glu | Arg | Val | Phe | Ser | Glu | Asp | Arg | Ala | Arg | Phe | Tyr | Gly | Ala | Glu |
| | | | | 245 | | | | | 250 | | | | | 255 | |
| Ile | Val | Ser | Ala | Leu | Asp | Tyr | Leu | His | Ser | Glu | Lys | Asn | Val | Val | Tyr |
| | | | 260 | | | | | 265 | | | | | 270 | | |
| Arg | Asp | Leu | Lys | Leu | Glu | Asn | Leu | Met | Leu | Asp | Lys | Asp | Gly | His | Ile |
| | 275 | | | | | | 280 | | | | | 285 | | | |
| Lys | Ile | Thr | Asp | Phe | Gly | Leu | Cys | Lys | Glu | Gly | Ile | Lys | Asp | Gly | Ala |
| | 290 | | | | | 295 | | | | | 300 | | | | |
| Thr | Met | Lys | Thr | Phe | Cys | Gly | Thr | Pro | Glu | Tyr | Leu | Ala | Pro | Glu | Val |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Leu | Glu | Asp | Asn | Asp | Tyr | Gly | Arg | Ala | Val | Asp | Trp | Trp | Gly | Leu | Gly |
| | | | | 325 | | | | | 330 | | | | | 335 | |
| Val | Val | Met | Tyr | Glu | Met | Met | Cys | Gly | Arg | Leu | Pro | Phe | Tyr | Asn | Gln |
| | | | 340 | | | | | 345 | | | | | 350 | | |
| Asp | His | Glu | Lys | Leu | Phe | Glu | Leu | Ile | Leu | Met | Glu | Glu | Ile | Arg | Phe |
| | 355 | | | | | | 360 | | | | | 365 | | | |
| Pro | Arg | Thr | Leu | Gly | Pro | Glu | Ala | Lys | Ser | Leu | Leu | Ser | Gly | Leu | Leu |
| | 370 | | | | | 375 | | | | | 380 | | | | |
| Lys | Lys | Asp | Pro | Lys | Gln | Arg | Leu | Gly | Gly | Gly | Ser | Glu | Asp | Ala | Lys |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Glu | Ile | Met | Gln | His | Arg | Phe | Phe | Ala | Gly | Ile | Val | Trp | Gln | His | Val |
| | | | 405 | | | | | | 410 | | | | | 415 | |
| Tyr | Glu | Lys | Lys | Leu | Ser | Pro | Pro | Phe | Lys | Pro | Gln | Val | Thr | Ser | Glu |
| | | | 420 | | | | | 425 | | | | | 430 | | |
| Thr | Asp | Thr | Arg | Tyr | Phe | Asp | Glu | Glu | Phe | Thr | Ala | Gln | Met | Ile | Thr |
| | 435 | | | | | | 440 | | | | | 445 | | | |
| Ile | Thr | Pro | Pro | Asp | Gln | Asp | Asp | Ser | Met | Glu | Cys | Val | Asp | Ser | Glu |
| | 450 | | | | | 455 | | | | | 460 | | | | |
| Arg | Arg | Pro | His | Phe | Pro | Gln | Phe | Ser | Tyr | Ser | Ala | Ser | Ser | Thr | Ala |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 |
| Ser | Asp | Pro | Pro | Val | Ala | Thr | Met | Val | Ser | Lys | Gly | Glu | Glu | Leu | Phe |
| | | | | 485 | | | | | 490 | | | | | 495 | |
| Thr | Gly | Val | Val | Pro | Ile | Leu | Val | Glu | Leu | Asp | Gly | Asp | Val | Asn | Gly |
| | | | 500 | | | | | 505 | | | | | 510 | | |
| His | Lys | Phe | Ser | Val | Ser | Gly | Glu | Gly | Glu | Gly | Asp | Ala | Thr | Tyr | Gly |
| | 515 | | | | | | 520 | | | | | 525 | | | |
| Lys | Leu | Thr | Leu | Lys | Phe | Ile | Cys | Thr | Thr | Gly | Lys | Leu | Pro | Val | Pro |
| | 530 | | | | | 535 | | | | | 540 | | | | |
| Trp | Pro | Thr | Leu | Val | Thr | Leu | Thr | Tyr | Gly | Val | Gln | Cys | Phe | Ser | |
| 545 | | | | | 550 | | | | 555 | | | | | 560 | |
| Arg | Tyr | Pro | Asp | His | Met | Lys | Gln | His | Asp | Phe | Phe | Lys | Ser | Ala | Met |
| | | | | 565 | | | | | 570 | | | | | 575 | |
| Pro | Glu | Gly | Tyr | Val | Gln | Glu | Arg | Thr | Ile | Phe | Phe | Lys | Asp | Asp | Gly |
| | | | 580 | | | | | 585 | | | | | 590 | | |
| Asn | Tyr | Lys | Thr | Arg | Ala | Glu | Val | Lys | Phe | Glu | Gly | Asp | Thr | Leu | Val |
| | 595 | | | | | | 600 | | | | | 605 | | | |
| Asn | Arg | Ile | Glu | Leu | Lys | Gly | Ile | Asp | Phe | Lys | Glu | Asp | Gly | Asn | Ile |
| | 610 | | | | | 615 | | | | | 620 | | | | |
| Leu | Gly | His | Lys | Leu | Glu | Tyr | Asn | Tyr | Asn | Ser | His | Asn | Val | Tyr | Ile |
| 625 | | | | | 630 | | | | | 635 | | | | | 640 |
| Met | Ala | Asp | Lys | Gln | Lys | Asn | Gly | Ile | Lys | Val | Asn | Phe | Lys | Ile | Arg |

645 650 655
 His Asn Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln
 660 665 670
 Asn Thr Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr
 675 680 685
 Leu Ser Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp
 690 695 700
 His Met Val Leu Leu Glu Phe Val Thr Ala Ala Gly Ile Thr Leu Gly
 705 710 715 720
 Met Asp Glu Leu Tyr Lys
 725

<210> 72

<211> 2751

<212> DNA

<213> Artificial Sequence

<220>

<223> Fusion construct

<220>

<221> CDS

<222> (1)..(2748)

<400> 72
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 Met Ala Asp Val Tyr Pro Ala Asn Asp Ser Thr Ala Ser Gln Asp Val
 1 5 10 15
 gcc aac cgc ttc gcc cgc aaa ggg gcg ctg agg cag aag aac gtg cat 96
 Ala Asn Arg Phe Ala Arg Lys Gly Ala Leu Arg Gln Lys Asn Val His
 20 25 30
 gag gtg aaa gac cac aaa ttc atc gcc cgc ttc ttc aag caa ccc acc 144
 Glu Val Lys Asp His Lys Phe Ile Ala Arg Phe Phe Lys Gln Pro Thr
 35 40 45
 ttc tgc agc cac tgc acc gac ttc atc tgg ggg ttt ggg aaa caa ggc 192
 Phe Cys Ser His Cys Thr Asp Phe Ile Trp Gly Phe Gly Lys Gln Gly
 50 55 60
 ttc cag tgc caa gtt tgc tgt ttt gtg gtt cat aag agg tgc cat gag 240
 Phe Gln Cys Gln Val Cys Cys Phe Val Val His Lys Arg Cys His Glu
 65 70 75 80
 ttc gtt acg ttc tct tgt ccg ggt gcg gat aag gga cct gac act gac 288
 Phe Val Thr Phe Ser Cys Pro Gly Ala Asp Lys Gly Pro Asp Thr Asp
 85 90 95
 gac ccc agg agc aag cac aag ttc aaa atc cac aca tac gga agc cct 336
 Asp Pro Arg Ser Lys His Lys Phe Lys Ile His Thr Tyr Gly Ser Pro
 100 105 110
 acc ttc tgt gat cac tgt ggg tcc ctg ctc tat gga ctt atc cac caa 384
 Thr Phe Cys Asp His Cys Gly Ser Leu Leu Tyr Gly Leu Ile His Gln
 115 120 125
 ggg atg aaa tgt gac acc tgc gac atg aat gtt cac aac cag tgt gtg 432
 Gly Met Lys Cys Asp Thr Cys Asp Met Asn Val His Asn Gln Cys Val
 130 135 140

| | |
|---|------|
| atc aat gac cct agc ctc tgc gga atg gat cac aca gag aag agg ggg | 480 |
| Ile Asn Asp Pro Ser Leu Cys Gly Met Asp His Thr Glu Lys Arg Gly | |
| 145 150 155 160 | |
| cgg att tat ctg aag gct gag gtc act gat gaa aag ctc cac gtc acg | 528 |
| Arg Ile Tyr Leu Lys Ala Glu Val Thr Asp Glu Lys Leu His Val Thr | |
| 165 170 175 | |
| gta cga gat gca aaa aat cta atc cct atg gat cca aat ggg ctt tcg | 576 |
| Val Arg Asp Ala Lys Asn Leu Ile Pro Met Asp Pro Asn Gly Leu Ser | |
| 180 185 190 | |
| gat cct tat gtg aag ctg aaa cta atc cct gac ccc aag aat gag agc | 624 |
| Asp Pro Tyr Val Lys Leu Lys Leu Ile Pro Asp Pro Lys Asn Glu Ser | |
| 195 200 205 | |
| aaa cag aaa acc aaa acc atc cgc tcc aac ctg aat cct cag tgg aat | 672 |
| Lys Gln Lys Thr Lys Thr Ile Arg Ser Asn Leu Asn Pro Gln Trp Asn | |
| 210 215 220 | |
| gag tcc ttc acg ttc aaa tta aaa cct tca gac aaa gac cgg cga ctg | 720 |
| Glu Ser Phe Thr Phe Lys Leu Lys Pro Ser Asp Lys Asp Arg Arg Leu | |
| 225 230 235 240 | |
| tct gta gaa atc tgg gac tgg gat cgg acg act cgg aat gac ttc atg | 768 |
| Ser Val Glu Ile Trp Asp Trp Asp Arg Thr Thr Arg Asn Asp Phe Met | |
| 245 250 255 | |
| gga tcc ctt tcc ttt ggt gtc tca gag cta atg aag atg ccg gcc agt | 816 |
| Gly Ser Leu Ser Phe Gly Val Ser Glu Leu Met Lys Met Pro Ala Ser | |
| 260 265 270 | |
| gga tgg tat aaa gct cac aac caa gaa gag ggc gaa tat tac aac gtg | 864 |
| Gly Trp Tyr Lys Ala His Asn Gln Glu Glu Gly Glu Tyr Tyr Asn Val | |
| 275 280 285 | |
| ccc att cca gaa gga gat gaa gaa ggc aac atg gaa ctc agg cag aag | 912 |
| Pro Ile Pro Glu Gly Asp Glu Glu Gly Asn Met Glu Leu Arg Gln Lys | |
| 290 295 300 | |
| ttt gag aaa gcc aag cta ggt cct gtt ggt aac aaa gtc atc agc cct | 960 |
| Phe Glu Lys Ala Lys Leu Gly Pro Val Gly Asn Lys Val Ile Ser Pro | |
| 305 310 315 320 | |
| tca gaa gac aga aag caa cca tcc aac aac ctg gac aga gtg aaa ctc | 1008 |
| Ser Glu Asp Arg Lys Gln Pro Ser Asn Asn Leu Asp Arg Val Lys Leu | |
| 325 330 335 | |
| aca gac ttc aac ttc ctc atg gtg ctg ggg aag ggg agt ttt ggg aag | 1056 |
| Thr Asp Phe Asn Phe Leu Met Val Leu Gly Lys Gly Ser Phe Gly Lys | |
| 340 345 350 | |
| gtg atg ctt gct gac agg aag gga acg gag gaa ctg tac gcc atc aag | 1104 |
| Val Met Leu Ala Asp Arg Lys Gly Thr Glu Glu Leu Tyr Ala Ile Lys | |
| 355 360 365 | |
| atc ctg aag aag gac gtg gtg atc cag gac gac gac gtg gag tgc acc | 1152 |
| Ile Leu Lys Lys Asp Val Val Ile Gln Asp Asp Asp Val Glu Cys Thr | |
| 370 375 380 | |
| atg gtg gag aag cgc gtg ctg gcc ctg ctg gac aag ccg cca ttt ctg | 1200 |
| Met Val Glu Lys Arg Val Leu Ala Leu Leu Asp Lys Pro Pro Phe Leu | |
| 385 390 395 400 | |
| aca cag ctg cac tcc tgc ttc cag aca gtg gac cgg ctg tac ttc gtc | 1248 |
| Thr Gln Leu His Ser Cys Phe Gln Thr Val Asp Arg Leu Tyr Phe Val | |
| 405 410 415 | |
| atg gaa tac gtc aac ggc ggg gat ctt atg tac cac att cag caa gtc | 1296 |
| Met Glu Tyr Val Asn Gly Gly Asp Leu Met Tyr His Ile Gln Gln Val | |
| 420 425 430 | |
| ggg aaa ttt aag gag cca caa gca gta ttc tac gca gcc gag atc tcc | 1344 |
| Gly Lys Phe Lys Glu Pro Gln Ala Val Phe Tyr Ala Ala Glu Ile Ser | |
| 435 440 445 | |
| atc gga ctg ttc ttc ctt cat aaa aga ggg atc att tac agg gat ctg | 1392 |
| Ile Gly Leu Phe Phe Leu His Lys Arg Gly Ile Ile Tyr Arg Asp Leu | |
| 450 455 460 | |
| aag ctg aac aat gtc atg ctg aac tca gaa ggg cac atc aaa atc gcc | 1440 |
| Lys Leu Asn Asn Val Met Leu Asn Ser Glu Gly His Ile Lys Ile Ala | |
| 465 470 475 480 | |

| | |
|---|------|
| gac ttc ggg atg tgc aag gaa cac atg atg gat gga gtc acg acc agg | 1488 |
| Asp Phe Gly Met Cys Lys Glu His Met Met Asp Gly Val Thr Arg | |
| 485 490 495 | |
| acc ttc tgc gga act ccg gac tac att gcc cca gag ata atc gct tac | 1536 |
| Thr Phe Cys Gly Thr Pro Asp Tyr Ile Ala Pro Glu Ile Ile Ala Tyr | |
| 500 505 510 | |
| cag ccg tac ggg aag tct gta gat tgg tgg gcg tac ggt gtg ctg ctg | 1584 |
| Gln Pro Tyr Gly Lys Ser Val Asp Trp Trp Ala Tyr Gly Val Leu Leu | |
| 515 520 525 | |
| tac gag atg cta gcc ggg cag cct ccg ttt gat ggt gaa gat gaa gat | 1632 |
| Tyr Glu Met Leu Ala Gly Gln Pro Pro Phe Asp Gly Glu Asp Glu Asp | |
| 530 535 540 | |
| gaa ctg ttt cag tct ata atg gag cac aac gtg tcc tac ccc aaa tcc | 1680 |
| Glu Leu Phe Gln Ser Ile Met Glu His Asn Val Ser Tyr Pro Lys Ser | |
| 545 550 555 560 | |
| ttg tcc aag gaa gcc gtc tcc atc tgc aaa gga ctt atg acc aaa cag | 1728 |
| Leu Ser Lys Glu Ala Val Ser Ile Cys Lys Gly Leu Met Thr Lys Gln | |
| 565 570 575 | |
| cct gcc aag cga ctg ggc tgc ggg ccc gag gga gag agg gat gtc aga | 1776 |
| Pro Ala Lys Arg Leu Gly Cys Gly Pro Glu Gly Glu Arg Asp Val Arg | |
| 580 585 590 | |
| gag cat gcc ttc ttc agg agg atc gac tgg gag aaa ctg gag aac agg | 1824 |
| Glu His Ala Phe Phe Arg Arg Ile Asp Trp Glu Lys Leu Glu Asn Arg | |
| 595 600 605 | |
| gag atc caa cca cca ttc aag ccc aaa gtg tgt ggc aaa gga gca gaa | 1872 |
| Glu Ile Gln Pro Pro Phe Lys Pro Lys Val Cys Gly Lys Gly Ala Glu | |
| 610 615 620 | |
| aac ttt gac aag ttc ttc acg cga gga cag cct gtc tta aca cca cca | 1920 |
| Asn Phe Asp Lys Phe Thr Arg Gly Gln Pro Val Leu Thr Pro Pro | |
| 625 630 635 640 | |
| gat cag ctg gtc att gct aac ata gac caa tct gat ttt gaa ggg ttc | 1968 |
| Asp Gln Leu Val Ile Ala Asn Ile Asp Gln Ser Asp Phe Glu Gly Phe | |
| 645 650 655 | |
| tcg tat gtc aac ccc cag ttt gtg cac cca atc ttg caa agt gca gta | 2016 |
| Ser Tyr Val Asn Pro Gln Phe Val His Pro Ile Leu Gln Ser Ala Val | |
| 660 665 670 | |
| ggg cgc gcc atg agt aaa gga gaa gaa ctt ttc act gga gtt gtc cca | 2064 |
| Gly Arg Ala Met Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro | |
| 675 680 685 | |
| att ctt gtt gaa tta gat ggc gat gtt aat ggg caa aaa ttc tct gtt | 2112 |
| Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly Gln Lys Phe Ser Val | |
| 690 695 700 | |
| agt gga gag ggt gaa ggt gat gca aca tac gga aaa ctt acc ctt aaa | 2160 |
| Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys | |
| 705 710 715 720 | |
| ttt att tgc act act ggg aag cta cct gtt cca tgg cca acg ctt gtc | 2208 |
| Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val | |
| 725 730 735 | |
| act act ctc act tat ggt gtt caa tgc ttt tct aga tac cca gat cat | 2256 |
| Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His | |
| 740 745 750 | |
| atg aaa cag cat gac ttt ttc aag agt gcc atg ccc gaa ggt tat gta | 2304 |
| Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val | |
| 755 760 765 | |
| cag gaa aga act ata ttt tac aaa gat gac ggg aac tac aag aca cgt | 2352 |
| Gln Glu Arg Thr Ile Phe Tyr Lys Asp Asp Gly Asn Tyr Lys Thr Arg | |
| 770 775 780 | |
| gct gaa gtc aag ttt gaa ggt gat acc ctt gtt aat aga atc gag tta | 2400 |
| Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu | |
| 785 790 795 800 | |
| aaa ggt att gat ttt aaa gaa gat gga aac att ctt gga cac aaa atg | 2448 |
| Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Met | |
| 805 810 815 | |

| | |
|---|------|
| gaa tac aat tat aac tca cat aat gta tac atc atg gca gac aaa cca | 2496 |
| Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Pro | |
| 820 825 830 | |
| aag aat ggc atc aaa gtt aac ttc aaa att aga cac aac att aaa gat | 2544 |
| Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Lys Asp | |
| 835 840 845 | |
| gga agc gtt caa tta gca gac cat tat caa caa aat act cca att ggc | 2592 |
| Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly | |
| 850 855 860 | |
| gat ggc cct gtc ctt tta cca gac aac cat tac ctg tcc acg caa tct | 2640 |
| Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser | |
| 865 870 875 880 | |
| gcc ctt tcc aaa gat ccc aac gaa aag aga gat cac atg atc ctt ctt | 2688 |
| Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Ile Leu Leu | |
| 885 890 895 | |
| gag ttt gta aca gct gct ggg att aca cat ggc atg gat gaa cta tac | 2736 |
| Glu Phe Val Thr Ala Ala Gly Ile Thr His Gly Met Asp Glu Leu Tyr | |
| 900 905 910 | |
| aaa cct cag gag taa | 2751 |
| Lys Pro Gln Glu | |
| 915 | |

<210> 73

<211> 916

<212> PRT

<213> Artificial Sequence

<220>

<223> Fusion construct

<400> 73

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| Met Ala Asp Val Tyr Pro Ala Asn Asp Ser Thr Ala Ser Gln Asp Val | |
| 1 5 10 15 | |
| Ala Asn Arg Phe Ala Arg Lys Gly Ala Leu Arg Gln Lys Asn Val His | |
| 20 25 30 | |
| Glu Val Lys Asp His Lys Phe Ile Ala Arg Phe Phe Lys Gln Pro Thr | |
| 35 40 45 | |
| Phe Cys Ser His Cys Thr Asp Phe Ile Trp Gly Phe Gly Lys Gln Gly | |
| 50 55 60 | |
| Phe Gln Cys Gln Val Cys Cys Phe Val Val His Lys Arg Cys His Glu | |
| 65 70 75 80 | |
| Phe Val Thr Phe Ser Cys Pro Gly Ala Asp Lys Gly Pro Asp Thr Asp | |
| 85 90 95 | |
| Asp Pro Arg Ser Lys His Lys Phe Lys Ile His Thr Tyr Gly Ser Pro | |
| 100 105 110 | |
| Thr Phe Cys Asp His Cys Gly Ser Leu Leu Tyr Gly Leu Ile His Gln | |
| 115 120 125 | |
| Gly Met Lys Cys Asp Thr Cys Asp Met Asn Val His Asn Gln Cys Val | |
| 130 135 140 | |
| Ile Asn Asp Pro Ser Leu Cys Gly Met Asp His Thr Glu Lys Arg Gly | |
| 145 150 155 160 | |
| Arg Ile Tyr Leu Lys Ala Glu Val Thr Asp Glu Lys Leu His Val Thr | |
| 165 170 175 | |
| Val Arg Asp Ala Lys Asn Leu Ile Pro Met Asp Pro Asn Gly Leu Ser | |
| 180 185 190 | |
| Asp Pro Tyr Val Lys Leu Lys Leu Ile Pro Asp Pro Lys Asn Glu Ser | |

Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys
 705 710 715 720
 Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val
 725 730 735
 Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His
 740 745 750
 Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val
 755 760 765
 Gln Glu Arg Thr Ile Phe Tyr Lys Asp Asp Gly Asn Tyr Lys Thr Arg
 770 775 780
 Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu
 785 790 795 800
 Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Met
 805 810 815
 Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Pro
 820 825 830
 Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Lys Asp
 835 840 845
 Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly
 850 855 860
 Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser
 865 870 875 880
 Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Ile Leu Leu
 885 890 895
 Glu Phe Val Thr Ala Ala Gly Ile Thr His Gly Met Asp Glu Leu Tyr
 900 905 910
 Lys Pro Gln Glu
 915

<210> 74

<211> 2157

<212> DNA

<213> Artificial Sequence

<220>

<223> Smad2-EGFP fusion

<220>

<221> CDS

<222> (1)..(2154)

<400> 74
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 Met Ser Ser Ile Leu Pro Phe Thr Pro Pro Val Val Lys Arg Leu Leu
 1 5 10 15
 gga tgg aag aag tca gct ggt ggg tct gga gga gca ggc gga gga gag 96
 Gly Trp Lys Lys Ser Ala Gly Gly Ser Gly Gly Ala Gly Gly Gly Glu
 20 25 30
 cag aat ggg cag gaa gaa aag tgg tgt gag aaa gca gtg aaa agt ctg 144
 Gln Asn Gly Gln Glu Glu Lys Trp Cys Glu Lys Ala Val Lys Ser Leu
 35 40 45
 gtg aag aag cta aag aaa aca gga cga tta gat gag ctt gag aaa gcc 192

| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|------|
| Val | Lys | Lys | Leu | Lys | Lys | Thr | Gly | Arg | Leu | Asp | Glu | Leu | Glu | Lys | Ala | | |
| 50 | | | | | | 55 | | | | | 60 | | | | | | |
| atc | acc | act | caa | aac | tgt | aat | act | aaa | tgt | gtt | acc | ata | cca | agc | act | | 240 |
| Ile | Thr | Thr | Gln | Asn | Cys | Asn | Thr | Lys | Cys | Val | Thr | Ile | Pro | Ser | Thr | | |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 | | |
| tgc | tct | gaa | att | tgg | gga | ctg | agt | aca | cca | aat | acg | ata | gat | cag | tgg | | 288 |
| Cys | Ser | Glu | Ile | Trp | Gly | Leu | Ser | Thr | Pro | Asn | Thr | Ile | Asp | Gln | Trp | | |
| | | | | 85 | | | | | 90 | | | | | 95 | | | |
| gat | aca | aca | ggc | ctt | tac | agc | ttc | tct | gaa | caa | acc | agg | tct | ctt | gat | | 336 |
| Asp | Thr | Thr | Gly | Leu | Tyr | Ser | Phe | Ser | Glu | Gln | Thr | Arg | Ser | Leu | Asp | | |
| | | | 100 | | | | | 105 | | | | | 110 | | | | |
| ggg | cgt | ctc | cag | gta | tcc | cat | cga | aaa | gga | ttg | cca | cat | gtt | ata | tat | | 384 |
| Gly | Arg | Leu | Gln | Val | Ser | His | Arg | Lys | Gly | Leu | Pro | His | Val | Ile | Tyr | | |
| | | | 115 | | | | 120 | | | | | 125 | | | | | |
| tgc | cga | tta | tgg | cgc | tgg | cct | gat | ctt | cac | agt | cat | cat | gaa | ctc | aag | | 432 |
| Cys | Arg | Leu | Trp | Arg | Trp | Pro | Asp | Leu | His | Ser | His | His | Glu | Leu | Lys | | |
| | | | 130 | | | 135 | | | | | 140 | | | | | | |
| gca | att | gaa | aac | tgc | gaa | tat | gct | ttt | aat | ctt | aaa | aag | gat | gaa | gta | | 480 |
| Ala | Ile | Glu | Asn | Cys | Glu | Tyr | Ala | Phe | Asn | Leu | Lys | Lys | Asp | Glu | Val | | |
| | | | | 145 | | 150 | | | 155 | | | | | 160 | | | |
| tgt | gta | aac | cct | tac | cac | tat | cag | aga | gtt | gag | aca | cca | gtt | ttg | cct | | 528 |
| Cys | Val | Asn | Pro | Tyr | His | Tyr | Gln | Arg | Val | Glu | Thr | Pro | Val | Leu | Pro | | |
| | | | | 165 | | | | 170 | | | | | | 175 | | | |
| cca | gta | tta | gtg | ccc | cga | cac | acc | gag | atc | cta | aca | gaa | ctt | ccg | cct | | 576 |
| Pro | Val | Leu | Val | Pro | Arg | His | Thr | Glu | Ile | Leu | Thr | Glu | Leu | Pro | Pro | | |
| | | | 180 | | | | | 185 | | | | | 190 | | | | |
| ctg | gat | gac | tat | act | cac | tcc | att | cca | gaa | aac | act | aac | ttc | cca | gca | | 624 |
| Leu | Asp | Asp | Tyr | Thr | His | Ser | Ile | Pro | Glu | Asn | Thr | Asn | Phe | Pro | Ala | | |
| | | | 195 | | | 200 | | | | | | 205 | | | | | |
| gga | att | gag | cca | cag | agt | aat | tat | att | cca | gaa | acg | cca | cct | cct | gga | | 672 |
| Gly | Ile | Glu | Pro | Gln | Ser | Asn | Tyr | Ile | Pro | Glu | Thr | Pro | Pro | Pro | Gly | | |
| | | | 210 | | | 215 | | | | | | 220 | | | | | |
| tat | atc | agt | gaa | gat | gga | gaa | aca | agt | gac | caa | cag | ttg | aat | caa | agt | | 720 |
| Tyr | Ile | Ser | Glu | Asp | Gly | Glu | Thr | Ser | Asp | Gln | Gln | Leu | Asn | Gln | Ser | | |
| | | | | 225 | | 230 | | | 235 | | | | | | 240 | | |
| atg | gac | aca | ggc | tct | cca | gca | gaa | cta | tct | cct | act | act | ctt | tcc | cct | | 768 |
| Met | Asp | Thr | Gly | Ser | Pro | Ala | Glu | Leu | Ser | Pro | Thr | Thr | Leu | Ser | Pro | | |
| | | | | 245 | | | | 250 | | | | | | 255 | | | |
| gtt | aat | cat | agc | ttg | gat | tta | cag | cca | gtt | act | tac | tca | gaa | cct | gca | | 816 |
| Val | Asn | His | Ser | Leu | Asp | Leu | Gln | Pro | Val | Thr | Tyr | Ser | Glu | Pro | Ala | | |
| | | | | 260 | | | | 265 | | | | | 270 | | | | |
| ttt | tgg | tgt | tca | ata | gca | tat | tat | gaa | tta | aat | cag | agg | gtt | gga | gaa | | 864 |
| Phe | Trp | Cys | Ser | Ile | Ala | Tyr | Tyr | Glu | Leu | Asn | Gln | Arg | Val | Gly | Glu | | |
| | | | 275 | | | 280 | | | | | | 285 | | | | | |
| acc | ttc | cat | gca | tca | cag | ccc | tca | ctc | act | gta | gat | ggc | ttt | aca | gac | | 912 |
| Thr | Phe | His | Ala | Ser | Gln | Pro | Ser | Leu | Thr | Val | Asp | Gly | Phe | Thr | Asp | | |
| | | | 290 | | | 295 | | | | | 300 | | | | | | |
| cca | tca | aat | tca | gag | agg | ttc | tgc | tta | ggg | tta | ctc | tcc | aat | gtt | aac | | 960 |
| Pro | Ser | Asn | Ser | Glu | Arg | Phe | Cys | Leu | Gly | Leu | Leu | Ser | Asn | Val | Asn | | |
| | | | | 305 | | 310 | | | 315 | | | | | 320 | | | |
| cga | aat | gcc | acg | gta | gaa | atg | aca | aga | agg | cat | ata | gga | aga | gga | gtg | | 1008 |
| Arg | Asn | Ala | Thr | Val | Glu | Met | Thr | Arg | Arg | His | Ile | Gly | Arg | Gly | Val | | |
| | | | | 325 | | | | 330 | | | | | | 335 | | | |
| cgc | tta | tac | tac | ata | ggg | ggg | gaa | gtt | ttt | gct | gag | tgc | cta | agt | gat | | 1056 |
| Arg | Leu | Tyr | Tyr | Ile | Gly | Gly | Glu | Val | Phe | Ala | Glu | Cys | Leu | Ser | Asp | | |
| | | | 340 | | | 345 | | | | | | 350 | | | | | |
| agt | gca | atc | ttt | gtg | cag | agc | ccc | aat | tgt | aat | cag | aga | tat | ggc | tgg | | 1104 |
| Ser | Ala | Ile | Phe | Val | Gln | Ser | Pro | Asn | Cys | Asn | Gln | Arg | Tyr | Gly | Trp | | |
| | | | 355 | | | 360 | | | | | | 365 | | | | | |
| cac | cct | gca | aca | gtg | tgt | aaa | att | cca | cca | ggc | tgt | aat | ctg | aag | atc | | 1152 |
| His | Pro | Ala | Thr | Val | Cys | Lys | Ile | Pro | Pro | Gly | Cys | Asn | Leu | Lys | Ile | | |
| | | | 370 | | | 375 | | | | | 380 | | | | | | |
| ttc | aac | aac | cag | gaa | ttt | gct | gct | ctt | ctg | gct | cag | tct | gtt | aat | cag | | 1200 |

| | |
|---|------|
| Phe Asn Asn Gln Glu Phe Ala Ala Leu Leu Ala Gln Ser Val Asn Gln | |
| 385 390 395 400 | |
| ggt ttt gaa gcc gtc tat cag cta act aga atg tgc acc ata aga atg | 1248 |
| Gly Phe Glu Ala Val Tyr Gln Leu Thr Arg Met Cys Thr Ile Arg Met | |
| 405 410 415 | |
| agt ttt gtg aaa ggg tgg gga gca gaa tac cga agg cag acg gta aca | 1296 |
| Ser Phe Val Lys Gly Trp Gly Ala Glu Tyr Arg Arg Gln Thr Val Thr | |
| 420 425 430 | |
| agt act cct tgc tgg att gaa ctt cat ctg aat gga cct cta cag tgg | 1344 |
| Ser Thr Pro Cys Trp Ile Glu Leu His Leu Asn Gly Pro Leu Gln Trp | |
| 435 440 445 | |
| ttg gac aaa gta tta act cag atg gga tcc cct tca gtg cgt tgc tca | 1392 |
| Leu Asp Lys Val Leu Thr Gln Met Gly Ser Pro Ser Val Arg Cys Ser | |
| 450 455 460 | |
| agc atg tca tgg gta ccg cgg gcc cgg gat cca ccg gtc gcc acc atg | 1440 |
| Ser Met Ser Trp Val Pro Arg Ala Arg Asp Pro Pro Val Ala Thr Met | |
| 465 470 475 480 | |
| gtg agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg gtc | 1488 |
| Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val | |
| 485 490 495 | |
| gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc gag | 1536 |
| Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu | |
| 500 505 510 | |
| ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc tgc | 1584 |
| Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys | |
| 515 520 525 | |
| acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc ctg | 1632 |
| Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu | |
| 530 535 540 | |
| acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag cag | 1680 |
| Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln | |
| 545 550 555 560 | |
| cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag cgc | 1728 |
| His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg | |
| 565 570 575 | |
| acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag gtg | 1776 |
| Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val | |
| 580 585 590 | |
| aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc atc | 1824 |
| Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile | |
| 595 600 605 | |
| gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac aac | 1872 |
| Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn | |
| 610 615 620 | |
| tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac ggc | 1920 |
| Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly | |
| 625 630 635 640 | |
| atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc gtg | 1968 |
| Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val | |
| 645 650 655 | |
| cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc ccc | 2016 |
| Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro | |
| 660 665 670 | |
| gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg agc | 2064 |
| Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser | |
| 675 680 685 | |
| aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc gtg | 2112 |
| Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val | |
| 690 695 700 | |
| acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag taa | 2157 |
| Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys | |
| 705 710 715 | |

<210> 75

<211> 718

<212> PRT

<213> Artificial Sequence

<220>

<223> Smad2-EGFP fusion

<400> 75

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Gln Asn Gly Gln Glu Glu Lys Trp Cys Glu Lys Ala Val Lys Ser Leu
35      40      45
Val Lys Lys Leu Lys Lys Thr Gly Arg Leu Asp Glu Leu Glu Lys Ala
50      55      60
Ile Thr Thr Gln Asn Cys Asn Thr Lys Cys Val Thr Ile Pro Ser Thr
65      70      75      80
Cys Ser Glu Ile Trp Gly Leu Ser Thr Pro Asn Thr Ile Asp Gln Trp
85      90      95
Asp Thr Thr Gly Leu Tyr Ser Phe Ser Glu Gln Thr Arg Ser Leu Asp
100      105      110
Gly Arg Leu Gln Val Ser His Arg Lys Gly Leu Pro His Val Ile Tyr
115      120      125
Cys Arg Leu Trp Arg Trp Pro Asp Leu His Ser His His Glu Leu Lys
130      135      140
Ala Ile Glu Asn Cys Glu Tyr Ala Phe Asn Leu Lys Lys Asp Glu Val
145      150      155      160
Cys Val Asn Pro Tyr His Tyr Gln Arg Val Glu Thr Pro Val Leu Pro
165      170      175
Pro Val Leu Val Pro Arg His Thr Glu Ile Leu Thr Glu Leu Pro Pro
180      185      190
Leu Asp Asp Tyr Thr His Ser Ile Pro Glu Asn Thr Asn Phe Pro Ala
195      200      205
Gly Ile Glu Pro Gln Ser Asn Tyr Ile Pro Glu Thr Pro Pro Pro Gly
210      215      220
Tyr Ile Ser Glu Asp Gly Glu Thr Ser Asp Gln Gln Leu Asn Gln Ser
225      230      235      240
Met Asp Thr Gly Ser Pro Ala Glu Leu Ser Pro Thr Thr Leu Ser Pro
245      250      255
Val Asn His Ser Leu Asp Leu Gln Pro Val Thr Tyr Ser Glu Pro Ala
260      265      270
Phe Trp Cys Ser Ile Ala Tyr Tyr Glu Leu Asn Gln Arg Val Gly Glu
275      280      285
Thr Phe His Ala Ser Gln Pro Ser Leu Thr Val Asp Gly Phe Thr Asp
290      295      300
Pro Ser Asn Ser Glu Arg Phe Cys Leu Gly Leu Ser Asn Val Asn
305      310      315      320
Arg Asn Ala Thr Val Glu Met Thr Arg Arg His Ile Gly Arg Gly Val
325      330      335
Arg Leu Tyr Tyr Ile Gly Gly Glu Val Phe Ala Glu Cys Leu Ser Asp
340      345      350
Ser Ala Ile Phe Val Gln Ser Pro Asn Cys Asn Gln Arg Tyr Gly Trp
355      360      365
His Pro Ala Thr Val Cys Lys Ile Pro Pro Gly Cys Asn Leu Lys Ile
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| | | | | |
|---|-----|-----|-----|-----|
| 370 | | 375 | | 380 |
| Phe Asn Asn Gln Glu Phe Ala Ala Leu Leu Ala Gln Ser Val Asn Gln | | | | |
| 385 | | 390 | | 395 |
| Gly Phe Glu Ala Val Tyr Gln Leu Thr Arg Met Cys Thr Ile Arg Met | | | | |
| | 405 | | 410 | |
| Ser Phe Val Lys Gly Trp Gly Ala Glu Tyr Arg Arg Gln Thr Val Thr | | | | |
| | 420 | | 425 | |
| Ser Thr Pro Cys Trp Ile Glu Leu His Leu Asn Gly Pro Leu Gln Trp | | | | |
| | 435 | | 440 | |
| Leu Asp Lys Val Leu Thr Gln Met Gly Ser Pro Ser Val Arg Cys Ser | | | | |
| | 450 | | 455 | |
| Ser Met Ser Trp Val Pro Arg Ala Arg Asp Pro Pro Val Ala Thr Met | | | | |
| 465 | | 470 | | 475 |
| Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val | | | | |
| | 485 | | 490 | |
| Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu | | | | |
| | 500 | | 505 | |
| Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys | | | | |
| | 515 | | 520 | |
| Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu | | | | |
| | 530 | | 535 | |
| Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln | | | | |
| 545 | | 550 | | 555 |
| His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg | | | | |
| | 565 | | 570 | |
| Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val | | | | |
| | 580 | | 585 | |
| Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile | | | | |
| | 595 | | 600 | |
| Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn | | | | |
| | 610 | | 615 | |
| Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly | | | | |
| 625 | | 630 | | 635 |
| Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val | | | | |
| | 645 | | 650 | |
| Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro | | | | |
| | 660 | | 665 | |
| Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser | | | | |
| | 675 | | 680 | |
| Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val | | | | |
| | 690 | | 695 | |
| Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys | | | | |
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<212> DNA

<213> Artificial Sequence

<220>

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<220>

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ctg agc att gtg cat agt ttg atg tgc cat aga caa ggt gga gag agt      96
Leu Ser Ile Val His Ser Leu Met Cys His Arg Gln Gly Gly Glu Ser
20      25      30
gaa aca ttt gca aaa aga gca att gaa agt ttg gta aag aag ctg aag      144
Glu Thr Phe Ala Lys Arg Ala Ile Glu Ser Leu Val Lys Lys Leu Lys
35      40      45
gag aaa aaa gat gaa ttg gat tct tta ata aca gct ata act aca aat      192
Glu Lys Lys Asp Glu Leu Asp Ser Leu Ile Thr Ala Ile Thr Thr Asn
50      55      60
gga gct cat cct agt aaa tgt gtt acc ata cag aga aca ttg gat ggg      240
Gly Ala His Pro Ser Lys Cys Val Thr Ile Gln Arg Thr Leu Asp Gly
65      70      75      80
agg ctt cag gtg gct ggt cgg aaa gga ttt cct cat gtg atc tat gcc      288
Arg Leu Gln Val Ala Gly Arg Lys Gly Phe Pro His Val Ile Tyr Ala
85      90      95
cgt ctc tgg agg tgg cct gat ctt cac aaa aat gaa cta aaa cat gtt      336
Arg Leu Trp Arg Trp Pro Asp Leu His Lys Asn Glu Leu Lys His Val
100      105      110
aaa tat tgt cag tat gcg ttt gac tta aaa tgt gat agt gtc tgt gtg      384
Lys Tyr Cys Gln Tyr Ala Phe Asp Leu Lys Cys Asp Ser Val Cys Val
115      120      125
aat cca tat cac tac gaa cga gtt gta tca cct gga att gat ctc tca      432
Asn Pro Tyr His Tyr Glu Arg Val Val Ser Pro Gly Ile Asp Leu Ser
130      135      140
gga tta aca ctg cag agt aat gct cca tca agt atg atg gtg aag gat      480
Gly Leu Thr Leu Gln Ser Asn Ala Pro Ser Ser Met Met Val Lys Asp
145      150      155      160
gaa tat gtg cat gac ttt gag gga cag cca tcg ttg tcc act gaa gga      528
Glu Tyr Val His Asp Phe Glu Gly Gln Pro Ser Leu Ser Thr Glu Gly
165      170      175
cat tca att caa acc atc cag cat cca cca agt aat cgt gca tcg aca      576
His Ser Ile Gln Thr Ile Gln His Pro Pro Ser Asn Arg Ala Ser Thr
180      185      190
gag aca tac agc acc cca gct ctg tta gcc cca tct gag tct aat gct      624
Glu Thr Tyr Ser Thr Pro Ala Leu Leu Ala Pro Ser Glu Ser Asn Ala
195      200      205
acc agc act gcc aac ttt ccc aac att cct gtg gct tcc aca agt cag      672
Thr Ser Thr Ala Asn Phe Pro Asn Ile Pro Val Ala Ser Thr Ser Gln
210      215      220
cct gcc agt ata ctg ggg ggc agc cat agt gaa gga ctg ttg cag ata      720
Pro Ala Ser Ile Leu Gly Gly Ser His Ser Glu Gly Leu Leu Gln Ile
225      230      235      240
gca tca ggg cct cag cca gga cag cag cag aat gga ttt act ggt cag      768
Ala Ser Gly Pro Gln Pro Gly Gln Gln Asn Gly Phe Thr Gly Gln
245      250      255
cca gct act tac cat cat aac agc act acc acc tgg act gga agt agg      816
Pro Ala Thr Tyr His His Asn Ser Thr Thr Thr Trp Thr Gly Ser Arg
260      265      270
act gca cca tac aca cct aat ttg cct cac cac caa aac ggc cat ctt      864
Thr Ala Pro Tyr Thr Pro Asn Leu Pro His His Gln Asn Gly His Leu
275      280      285
cag cac cac ccg cct atg ccg ccc cat ccc gga cat tac tgg cct gtt      912
Gln His His Pro Pro Met Pro Pro His Pro Gly His Tyr Trp Pro Val
290      295      300
cac aat gag ctt gca ttc cag cct ccc att tcc aat cat cct gct cct      960

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| | |
|---|------|
| His Asn Glu Leu Ala Phe Gln Pro Pro Ile Ser Asn His Pro Ala Pro | |
| 305 310 315 320 | |
| gag tat tgg tgt tcc att gct tac ttt gaa atg gat gtt cag gta gga | 1008 |
| Glu Tyr Trp Cys Ser Ile Ala Tyr Phe Glu Met Asp Val Gln Val Gly | |
| 325 330 335 | |
| gag aca ttt aag gtt cct tca agc tgc cct att gtt act gtt gat gga | 1056 |
| Glu Thr Phe Lys Val Pro Ser Ser Cys Pro Ile Val Thr Val Asp Gly | |
| 340 345 350 | |
| tac gtg gac cct tct gga gga gat cgc ttt tgt ttg ggt caa ctc tcc | 1104 |
| Tyr Val Asp Pro Ser Gly Gly Asp Arg Phe Cys Leu Gly Gln Leu Ser | |
| 355 360 365 | |
| aat gtc cac agg aca gaa gcc att gag aga gca agg ttg cac ata ggc | 1152 |
| Asn Val His Arg Thr Glu Ala Ile Glu Arg Ala Arg Leu His Ile Gly | |
| 370 375 380 | |
| aaa ggt gtg cag ttg gaa tgt aaa ggt gaa ggt gat gtt ttg gtc agg | 1200 |
| Lys Gly Val Gln Leu Glu Cys Lys Gly Glu Gly Asp Val Trp Val Arg | |
| 385 390 395 400 | |
| tgc ctt agt gac cac gcg gtc ttt gta cag agt tac tac tta gac aga | 1248 |
| Cys Leu Ser Asp His Ala Val Phe Val Gln Ser Tyr Tyr Leu Asp Arg | |
| 405 410 415 | |
| gaa gct ggg cgt gca cct gga gat gct gtt cat aag atc tac cca agt | 1296 |
| Glu Ala Gly Arg Ala Pro Gly Asp Ala Val His Lys Ile Tyr Pro Ser | |
| 420 425 430 | |
| gca tat ata aag gtc ttt gat ttg cgt cag tgt cat cga cag atg cag | 1344 |
| Ala Tyr Ile Lys Val Phe Asp Leu Arg Gln Cys His Arg Gln Met Gln | |
| 435 440 445 | |
| cag cag gcg gct act gca caa gct gca gca gct gcc cag gca gca gcc | 1392 |
| Gln Gln Ala Ala Thr Ala Gln Ala Ala Ala Ala Gln Ala Ala Ala | |
| 450 455 460 | |
| gtg gca gga aac atc cct ggc cca gga tca gta ggt gga ata gct cca | 1440 |
| Val Ala Gly Asn Ile Pro Gly Pro Gly Ser Val Gly Gly Ile Ala Pro | |
| 465 470 475 480 | |
| gct atc agt ctg tca gct gct gct gga att ggt gtt gat gac ctt cgt | 1488 |
| Ala Ile Ser Leu Ser Ala Ala Ala Gly Ile Gly Val Asp Asp Leu Arg | |
| 485 490 495 | |
| cgc tta tgc ata ctc agg atg agt ttt gtg aaa ggc ttg gga ccg gat | 1536 |
| Arg Leu Cys Ile Leu Arg Met Ser Phe Val Lys Gly Trp Gly Pro Asp | |
| 500 505 510 | |
| tac cca aga cag agc atc aaa gaa aca cct tgc ttg att gaa att cac | 1584 |
| Tyr Pro Arg Gln Ser Ile Lys Glu Thr Pro Cys Trp Ile Glu Ile His | |
| 515 520 525 | |
| tta cac cgg gcc ctc cag ctc cta gac gaa gta ctt cat acc atg ccg | 1632 |
| Leu His Arg Ala Leu Gln Leu Leu Asp Glu Val Leu His Thr Met Pro | |
| 530 535 540 | |
| att gca gac cca caa cct tta gac ttg gat cca ccg gtc gcc acc atg | 1680 |
| Ile Ala Asp Pro Gln Pro Leu Asp Trp Asp Pro Pro Val Ala Thr Met | |
| 545 550 555 560 | |
| gtg agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg gtc | 1728 |
| Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val | |
| 565 570 575 | |
| gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc gag | 1776 |
| Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu | |
| 580 585 590 | |
| ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc tgc | 1824 |
| Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys | |
| 595 600 605 | |
| acc acc ggc aag ctg ccc gtg ccc ttg ccc acc ctc gtg acc acc ctg | 1872 |
| Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu | |
| 610 615 620 | |
| acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag cag | 1920 |
| Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln | |
| 625 630 635 640 | |
| cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag cgc | 1968 |

| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|--|
| His | Asp | Phe | Phe | Lys | Ser | Ala | Met | Pro | Glu | Gly | Tyr | Val | Gln | Glu | Arg | | |
| | | | | 645 | | | | | 650 | | | | | 655 | | | |
| acc | atc | ttc | ttc | aag | gac | gac | ggc | aac | tac | aag | acc | cgc | gcc | gag | gtg | 2016 | |
| Thr | Ile | Phe | Phe | Lys | Asp | Asp | Gly | Asn | Tyr | Lys | Thr | Arg | Ala | Glu | Val | | |
| | | | | 660 | | | | 665 | | | | | 670 | | | | |
| aag | ttc | gag | ggc | gac | acc | ctg | gtg | aac | cgc | atc | gag | ctg | aag | ggc | atc | 2064 | |
| Lys | Phe | Glu | Gly | Asp | Thr | Leu | Val | Asn | Arg | Ile | Glu | Leu | Lys | Gly | Ile | | |
| | | | | 675 | | | | 680 | | | | | 685 | | | | |
| gac | ttc | aag | gag | gac | ggc | aac | atc | ctg | ggg | cac | aag | ctg | gag | tac | aac | 2112 | |
| Asp | Phe | Lys | Glu | Asp | Gly | Asn | Ile | Leu | Gly | His | Lys | Leu | Glu | Tyr | Asn | | |
| | | | | 690 | | | | 695 | | | | | 700 | | | | |
| tac | aac | agc | cac | aac | gtc | tat | atc | atg | gcc | gac | aag | cag | aag | aac | ggc | 2160 | |
| Tyr | Asn | Ser | His | Asn | Val | Tyr | Ile | Met | Ala | Asp | Lys | Gln | Lys | Asn | Gly | | |
| | | | | | 710 | | | | | | | | | | 720 | | |
| atc | aag | gtg | aac | ttc | aag | atc | cgc | cac | aac | atc | gag | gac | ggc | agc | gtg | 2208 | |
| Ile | Lys | Val | Asn | Phe | Lys | Ile | Arg | His | Asn | Ile | Glu | Asp | Gly | Ser | Val | | |
| | | | | | 725 | | | | | | | | | | 735 | | |
| cag | ctc | gcc | gac | cac | tac | cag | cag | aac | acc | ccc | atc | ggc | gac | ggc | ccc | 2256 | |
| Gln | Leu | Ala | Asp | His | Tyr | Gln | Gln | Asn | Thr | Pro | Ile | Gly | Asp | Gly | Pro | | |
| | | | | | 740 | | | | | | | | | | 750 | | |
| gtg | ctg | ctg | ccc | gac | aac | cac | tac | ctg | agc | acc | cag | tcc | gcc | ctg | agc | 2304 | |
| Val | Leu | Leu | Pro | Asp | Asn | His | Tyr | Leu | Ser | Thr | Gln | Ser | Ala | Leu | Ser | | |
| | | | | | 755 | | | | | | | | | | 765 | | |
| aaa | gac | ccc | aac | gag | aag | cgc | gat | cac | atg | gtc | ctg | ctg | gag | ttc | gtg | 2352 | |
| Lys | Asp | Pro | Asn | Glu | Lys | Arg | Asp | His | Met | Val | Leu | Leu | Glu | Phe | Val | | |
| | | | | | | | | | | | | | | | 780 | | |
| acc | gcc | gcc | ggg | atc | act | ctc | ggc | atg | gac | gag | ctg | tac | aag | taa | | 2397 | |
| Thr | Ala | Ala | Gly | Ile | Thr | Leu | Gly | Met | Asp | Glu | Leu | Tyr | Lys | | | | |
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<210> 77

<211> 798

<212> PRT

<213> Artificial Sequence

<220>

<223> Smad4-EGFP fusion

<400> 77

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| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Leu | Ser | Ile | Val | His | Ser | Leu | Met | Cys | His | Arg | Gln | Gly | Gly | Glu | Ser |
| | | | | 20 | | | | 25 | | | | | | 30 | |
| Glu | Thr | Phe | Ala | Lys | Arg | Ala | Ile | Glu | Ser | Leu | Val | Lys | Lys | Leu | Lys |
| | | | | 35 | | | | 40 | | | | | | 45 | |
| Glu | Lys | Lys | Asp | Glu | Leu | Asp | Ser | Leu | Ile | Thr | Ala | Ile | Thr | Thr | Asn |
| | | | | 50 | | | | 55 | | | | | | 60 | |
| Gly | Ala | His | Pro | Ser | Lys | Cys | Val | Thr | Ile | Gln | Arg | Thr | Leu | Asp | Gly |
| | | | | | | | | | | | | | | 80 | |
| Arg | Leu | Gln | Val | Ala | Gly | Arg | Lys | Gly | Phe | Pro | His | Val | Ile | Tyr | Ala |
| | | | | | | | | | | | | | | 95 | |
| Arg | Leu | Trp | Arg | Trp | Pro | Asp | Leu | His | Lys | Asn | Glu | Leu | Lys | His | Val |
| | | | | | | | | | | | | | | 110 | |
| Lys | Tyr | Cys | Gln | Tyr | Ala | Phe | Asp | Leu | Lys | Cys | Asp | Ser | Val | Cys | Val |
| | | | | | | | | | | | | | | | |
| Asn | Pro | Tyr | His | Tyr | Glu | Arg | Val | Val | Ser | Pro | Gly | Ile | Asp | Leu | Ser |
| | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| 130 | | | | | 135 | | | | | 140 | | | | | | |
| Gly | Leu | Thr | Leu | Gln | Ser | Asn | Ala | Pro | Ser | Ser | Met | Met | Val | Lys | Asp | |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 | |
| Glu | Tyr | Val | His | Asp | Phe | Glu | Gly | Gln | Pro | Ser | Leu | Ser | Thr | Glu | Gly | |
| | | | | 165 | | | | | 170 | | | | | 175 | | |
| His | Ser | Ile | Gln | Thr | Ile | Gln | His | Pro | Pro | Ser | Asn | Arg | Ala | Ser | Thr | |
| | | | 180 | | | | | 185 | | | | | 190 | | | |
| Glu | Thr | Tyr | Ser | Thr | Pro | Ala | Leu | Leu | Ala | Pro | Ser | Glu | Ser | Asn | Ala | |
| | | 195 | | | | | 200 | | | | | 205 | | | | |
| Thr | Ser | Thr | Ala | Asn | Phe | Pro | Asn | Ile | Pro | Val | Ala | Ser | Thr | Ser | Gln | |
| | 210 | | | | 215 | | | | | 220 | | | | | | |
| Pro | Ala | Ser | Ile | Leu | Gly | Gly | Ser | His | Ser | Glu | Gly | Leu | Leu | Gln | Ile | |
| 225 | | | | | 230 | | | | | 235 | | | | 240 | | |
| Ala | Ser | Gly | Pro | Gln | Pro | Gly | Gln | Gln | Gln | Asn | Gly | Phe | Thr | Gly | Gln | |
| | | | 245 | | | | | | 250 | | | | | 255 | | |
| Pro | Ala | Thr | Tyr | His | His | Asn | Ser | Thr | Thr | Thr | Trp | Thr | Gly | Ser | Arg | |
| | | 260 | | | | | 265 | | | | | | 270 | | | |
| Thr | Ala | Pro | Tyr | Thr | Pro | Asn | Leu | Pro | His | His | Gln | Asn | Gly | His | Leu | |
| | 275 | | | | | 280 | | | | | | 285 | | | | |
| Gln | His | Pro | Pro | Met | Pro | Pro | His | Pro | Gly | His | Tyr | Trp | Pro | Val | | |
| 290 | | | | | 295 | | | | | 300 | | | | | | |
| His | Asn | Glu | Leu | Ala | Phe | Gln | Pro | Pro | Ile | Ser | Asn | His | Pro | Ala | Pro | |
| 305 | | | | | 310 | | | | | 315 | | | | 320 | | |
| Glu | Tyr | Trp | Cys | Ser | Ile | Ala | Tyr | Phe | Glu | Met | Asp | Val | Gln | Val | Gly | |
| | | | 325 | | | | | | 330 | | | | | 335 | | |
| Glu | Thr | Phe | Lys | Val | Pro | Ser | Ser | Cys | Pro | Ile | Val | Thr | Val | Asp | Gly | |
| | | 340 | | | | | 345 | | | | | 350 | | | | |
| Tyr | Val | Asp | Pro | Ser | Gly | Gly | Asp | Arg | Phe | Cys | Leu | Gly | Gln | Leu | Ser | |
| | 355 | | | | | | 360 | | | | | 365 | | | | |
| Asn | Val | His | Arg | Thr | Glu | Ala | Ile | Glu | Arg | Ala | Arg | Leu | His | Ile | Gly | |
| | 370 | | | | 375 | | | | | | 380 | | | | | |
| Lys | Gly | Val | Gln | Leu | Glu | Cys | Lys | Gly | Glu | Gly | Asp | Val | Trp | Val | Arg | |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | |
| Cys | Leu | Ser | Asp | His | Ala | Val | Phe | Val | Gln | Ser | Tyr | Tyr | Leu | Asp | Arg | |
| | | | 405 | | | | | | 410 | | | | | 415 | | |
| Glu | Ala | Gly | Arg | Ala | Pro | Gly | Asp | Ala | Val | His | Lys | Ile | Tyr | Pro | Ser | |
| | | 420 | | | | | 425 | | | | | 430 | | | | |
| Ala | Tyr | Ile | Lys | Val | Phe | Asp | Leu | Arg | Gln | Cys | His | Arg | Gln | Met | Gln | |
| | 435 | | | | | 440 | | | | | | 445 | | | | |
| Gln | Gln | Ala | Ala | Thr | Ala | Gln | Ala | Ala | Ala | Ala | Ala | Gln | Ala | Ala | Ala | |
| | 450 | | | | | 455 | | | | | | 460 | | | | |
| Val | Ala | Gly | Asn | Ile | Pro | Gly | Pro | Gly | Ser | Val | Gly | Gly | Ile | Ala | Pro | |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 | |
| Ala | Ile | Ser | Leu | Ser | Ala | Ala | Ala | Gly | Ile | Gly | Val | Asp | Asp | Leu | Arg | |
| | | | 485 | | | | | | 490 | | | | | 495 | | |
| Arg | Leu | Cys | Ile | Leu | Arg | Met | Ser | Phe | Val | Lys | Gly | Trp | Gly | Pro | Asp | |
| | | 500 | | | | | 505 | | | | | | 510 | | | |
| Tyr | Pro | Arg | Gln | Ser | Ile | Lys | Glu | Thr | Pro | Cys | Trp | Ile | Glu | Ile | His | |
| | 515 | | | | | | 520 | | | | | 525 | | | | |
| Leu | His | Arg | Ala | Leu | Gln | Leu | Leu | Asp | Glu | Val | Leu | His | Thr | Met | Pro | |
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| Ile | Ala | Asp | Pro | Gln | Pro | Leu | Asp | Trp | Asp | Pro | Pro | Val | Ala | Thr | Met | |
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| Val | Ser | Lys | Gly | Glu | Glu | Leu | Phe | Thr | Gly | Val | Val | Pro | Ile | Leu | Val | |
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| Glu | Leu | Asp | Gly | Asp | Val | Asn | Gly | His | Lys | Phe | Ser | Val | Ser | Gly | Glu | |
| | | 580 | | | | | 585 | | | | | | 590 | | | |
| Gly | Glu | Gly | Asp | Ala | Thr | Tyr | Gly | Lys | Leu | Thr | Leu | Lys | Phe | Ile | Cys | |
| | | 595 | | | | | 600 | | | | | 605 | | | | |
| Thr | Thr | Gly | Lys | Leu | Pro | Val | Pro | Trp | Pro | Thr | Leu | Val | Thr | Thr | Leu | |
| | 610 | | | | | 615 | | | | | | 620 | | | | |
| Thr | Tyr | Gly | Val | Gln | Cys | Phe | Ser | Arg | Tyr | Pro | Asp | His | Met | Lys | Gln | |
| 625 | | | | | 630 | | | | | 635 | | | | | 640 | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| His | Asp | Phe | Phe | Lys | Ser | Ala | Met | Pro | Glu | Gly | Tyr | Val | Gln | Glu | Arg |
| | | | | 645 | | | | | 650 | | | | | 655 | |
| Thr | Ile | Phe | Phe | Lys | Asp | Asp | Gly | Asn | Tyr | Lys | Thr | Arg | Ala | Glu | Val |
| | | | 660 | | | | | 665 | | | | | | 670 | |
| Lys | Phe | Glu | Gly | Asp | Thr | Leu | Val | Asn | Arg | Ile | Glu | Leu | Lys | Gly | Ile |
| | | 675 | | | | | 680 | | | | | | | 685 | |
| Asp | Phe | Lys | Glu | Asp | Gly | Asn | Ile | Leu | Gly | His | Lys | Leu | Glu | Tyr | Asn |
| | 690 | | | | | 695 | | | | | 700 | | | | |
| Tyr | Asn | Ser | His | Asn | Val | Tyr | Ile | Met | Ala | Asp | Lys | Gln | Lys | Asn | Gly |
| 705 | | | | | 710 | | | | | 715 | | | | | 720 |
| Ile | Lys | Val | Asn | Phe | Lys | Ile | Arg | His | Asn | Ile | Glu | Asp | Gly | Ser | Val |
| | | | 725 | | | | | | 730 | | | | | 735 | |
| Gln | Leu | Ala | Asp | His | Tyr | Gln | Gln | Asn | Thr | Pro | Ile | Gly | Asp | Gly | Pro |
| | | | 740 | | | | | 745 | | | | | | 750 | |
| Val | Leu | Leu | Pro | Asp | Asn | His | Tyr | Leu | Ser | Thr | Gln | Ser | Ala | Leu | Ser |
| | | 755 | | | | | 760 | | | | | | | 765 | |
| Lys | Asp | Pro | Asn | Glu | Lys | Arg | Asp | His | Met | Val | Leu | Leu | Glu | Phe | Val |
| | 770 | | | | | 775 | | | | | 780 | | | | |
| Thr | Ala | Ala | Gly | Ile | Thr | Leu | Gly | Met | Asp | Glu | Leu | Tyr | Lys | | |
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| 1 5 10 15 | |
| cag atg cag gtg ctg tac ggc cag cac ttc ccc atc gag gtc cgg cac | 96 |
| Gln Met Gln Val Leu Tyr Gly Gln His Phe Pro Ile Glu Val Arg His | |
| 20 25 30 | |
| tac ttg gcc cag tgg att gag agc cag cca tgg gat gcc att gac ttg | 144 |
| Tyr Leu Ala Gln Trp Ile Glu Ser Gln Pro Trp Asp Ala Ile Asp Leu | |
| 35 40 45 | |
| gac aat ccc cag gac aga gcc caa gcc acc cag ctc ctg gag ggc ctg | 192 |
| Asp Asn Pro Gln Asp Arg Ala Gln Ala Thr Gln Leu Leu Glu Gly Leu | |
| 50 55 60 | |
| gtg cag gag ctg cag aag aag gcg gag cac cag gtg ggg gaa gat ggg | 240 |
| Val Gln Glu Leu Gln Lys Lys Ala Glu His Gln Val Gly Glu Asp Gly | |
| 65 70 75 80 | |
| ttt tta ctg aag atc aag ctg ggg cac tac gcc acg cag ctc cag aaa | 288 |
| Phe Leu Leu Lys Ile Lys Leu Gly His Tyr Ala Thr Gln Leu Gln Lys | |
| 85 90 95 | |

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|---|------|
| aca tat gac cgc tgc ccc ctg gag ctg gtc cgc tgc atc cgg cac att | 336 |
| Thr Tyr Asp Arg Cys Pro Leu Glu Leu Val Arg Cys Ile Arg His Ile | |
| 100 105 110 | |
| ctg tac aat gaa cag agg ctg gtc cga gaa gcc aac aat tgc agc tct | 384 |
| Leu Tyr Asn Glu Gln Arg Leu Val Arg Glu Ala Asn Asn Cys Ser Ser | |
| 115 120 125 | |
| ccg gct ggg atc ctg gtt gac gcc atg tcc cag aag cac ctt cag atc | 432 |
| Pro Ala Gly Ile Leu Val Asp Ala Met Ser Gln Lys His Leu Gln Ile | |
| 130 135 140 | |
| aac cag aca ttt gag gag ctg cga ctg gtc acg cag gac aca gag aat | 480 |
| Asn Gln Thr Phe Glu Glu Leu Arg Leu Val Thr Gln Asp Thr Glu Asn | |
| 145 150 155 160 | |
| gag ctg aag aaa ctg cag cag act cag gag tac ttc atc atc cag tac | 528 |
| Glu Leu Lys Lys Leu Gln Gln Thr Gln Glu Tyr Phe Ile Ile Gln Tyr | |
| 165 170 175 | |
| cag gag agc ctg agg atc caa gct cag ttt gcc cag ctg gcc cag ctg | 576 |
| Gln Glu Ser Leu Arg Ile Gln Ala Gln Phe Ala Gln Leu Ala Gln Leu | |
| 180 185 190 | |
| agc ccc cag gag cgt ctg agc cgg gag acg gcc ctc cag cag aag cag | 624 |
| Ser Pro Gln Glu Arg Leu Ser Arg Glu Thr Ala Leu Gln Lys Gln | |
| 195 200 205 | |
| gtg tct ctg gag gcc tgg ttg cag cgt gag gca cag aca ctg cag cag | 672 |
| Val Ser Leu Glu Ala Trp Leu Gln Arg Glu Ala Gln Thr Leu Gln Gln | |
| 210 215 220 | |
| tac cgc gtg gag ctg gcc gag aag cac cag aag acc ctg cag ctg ctg | 720 |
| Tyr Arg Val Glu Leu Ala Glu Lys His Gln Lys Thr Leu Gln Leu Leu | |
| 225 230 235 240 | |
| cgg aag cag cag acc atc atc ctg gat gac gag ctg atc cag tgg aag | 768 |
| Arg Lys Gln Gln Thr Ile Ile Leu Asp Asp Glu Leu Ile Gln Trp Lys | |
| 245 250 255 | |
| cgg cgg cag cag ctg gcc ggg aac ggc ggg ccc ccc gag ggc agc ctg | 816 |
| Arg Arg Gln Gln Leu Ala Gly Asn Gly Gly Pro Pro Glu Gly Ser Leu | |
| 260 265 270 | |
| gac gtg cta cag tcc tgg tgt gag aag ttg gcc gag atc atc tgg cag | 864 |
| Asp Val Leu Gln Ser Trp Cys Glu Lys Leu Ala Glu Ile Ile Trp Gln | |
| 275 280 285 | |
| aac cgg cag cag atc cgc agg gct gag cac ctc tgc cag cag ctg ccc | 912 |
| Asn Arg Gln Gln Ile Arg Arg Ala Glu His Leu Cys Gln Gln Leu Pro | |
| 290 295 300 | |
| atc ccc ggc cca gtg gag gag atg ctg gcc gag gtc aac gcc acc atc | 960 |
| Ile Pro Gly Pro Val Glu Glu Met Leu Ala Glu Val Asn Ala Thr Ile | |
| 305 310 315 320 | |
| acg gac att atc tca gcc ctg gtg acc agc aca ttc atc att gag aag | 1008 |
| Thr Asp Ile Ile Ser Ala Leu Val Thr Ser Thr Phe Ile Ile Glu Lys | |
| 325 330 335 | |
| cag cct cct cag gtc ctg aag acc cag acc aag ttt gca gcc acc gta | 1056 |
| Gln Pro Pro Gln Val Leu Lys Thr Gln Thr Lys Phe Ala Ala Thr Val | |
| 340 345 350 | |
| cgc ctg ctg gtg ggc ggg aag ctg aac gtg cac atg aat ccc ccc cag | 1104 |
| Arg Leu Leu Val Gly Gly Lys Leu Asn Val His Met Asn Pro Pro Gln | |
| 355 360 365 | |
| gtg aag gcc acc atc atc agt gag cag cag gcc aag tct ctg ctt aaa | 1152 |
| Val Lys Ala Thr Ile Ile Ser Glu Gln Gln Ala Lys Ser Leu Leu Lys | |
| 370 375 380 | |
| aat gag aac acc cgc aac gag tgc agt ggt gag atc ctg aac aac tgc | 1200 |
| Asn Glu Asn Thr Arg Asn Glu Cys Ser Gly Glu Ile Leu Asn Asn Cys | |
| 385 390 395 400 | |
| tgc gtg atg gag tac cac caa gcc acg ggc acc ctc agt gcc cac ttc | 1248 |
| Cys Val Met Glu Tyr His Gln Ala Thr Gly Thr Leu Ser Ala His Phe | |
| 405 410 415 | |
| agg aac atg tca ctg aag agg atc aag cgt gct gac cgg cgg ggt gca | 1296 |
| Arg Asn Met Ser Leu Lys Arg Ile Lys Arg Ala Asp Arg Arg Gly Ala | |
| 420 425 430 | |

| | |
|---|------|
| gag tcc gtg aca gag gag aag ttc aca gtc ctg ttt gag tct cag ttc | 1344 |
| Glu Ser Val Thr Glu Glu Lys Phe Thr Val Leu Phe Glu Ser Gln Phe | |
| 435 440 445 | |
| agt gtt ggc agc aat gag ctt gtg ttc cag gtg aag act ctg tcc cta | 1392 |
| Ser Val Gly Ser Asn Glu Leu Val Phe Gln Val Lys Thr Leu Ser Leu | |
| 450 455 460 | |
| cct gtg gtt gtc atc gtc cac ggc agc cag gac cac aat gcc acg gct | 1440 |
| Pro Val Val Val Ile Val His Gly Ser Gln Asp His Asn Ala Thr Ala | |
| 465 470 475 480 | |
| act gtg ctg tgg gac aat gcc ttt gct gag ccg ggc agg gtg cca ttt | 1488 |
| Thr Val Leu Trp Asp Asn Ala Phe Ala Glu Pro Gly Arg Val Pro Phe | |
| 485 490 495 | |
| gcc gtg cct gac aaa gtg ctg tgg ccg cag ctg tgt gag gcg ctc aac | 1536 |
| Ala Val Pro Asp Lys Val Leu Trp Pro Gln Leu Cys Glu Ala Leu Asn | |
| 500 505 510 | |
| atg aaa ttc aag gcc gaa gtg cag agc aac cgg ggc ctg acc aag gag | 1584 |
| Met Lys Phe Lys Ala Glu Val Gln Ser Asn Arg Gly Leu Thr Lys Glu | |
| 515 520 525 | |
| aac ctc gtg ttc ctg gcg cag aaa ctg ttc aac aac agc agc cac | 1632 |
| Asn Leu Val Phe Leu Ala Gln Lys Leu Phe Asn Asn Ser Ser Ser His | |
| 530 535 540 | |
| ctg gag gac tac agt ggc ctg tcc gtg tcc tgg tcc cag ttc aac agg | 1680 |
| Leu Glu Asp Tyr Ser Gly Leu Ser Val Ser Trp Ser Gln Phe Asn Arg | |
| 545 550 555 560 | |
| gag aac ttg ccg ggc tgg aac tac acc ttc tgg cag tgg ttt gac ggg | 1728 |
| Glu Asn Leu Pro Gly Trp Asn Tyr Thr Phe Trp Gln Trp Phe Asp Gly | |
| 565 570 575 | |
| gtg atg gag gtg ttg aag aag cac cac aag ccc cac tgg aat gat ggg | 1776 |
| Val Met Glu Val Leu Lys Lys His His Lys Pro His Trp Asn Asp Gly | |
| 580 585 590 | |
| gcc atc cta ggt ttt gtg aat aag caa cag gcc cac gac ctg ctc atc | 1824 |
| Ala Ile Leu Gly Phe Val Asn Lys Gln Gln Ala His Asp Leu Leu Ile | |
| 595 600 605 | |
| aac aag ccc gac ggg acc ttc ttg ttg cgc ttt agt gac tca gaa atc | 1872 |
| Asn Lys Pro Asp Gly Thr Phe Leu Leu Arg Phe Ser Asp Ser Glu Ile | |
| 610 615 620 | |
| ggg ggc atc acc atc gcc tgg aag ttt gac tcc ccg gaa cgc aac ctg | 1920 |
| Gly Gly Ile Thr Ile Ala Trp Lys Phe Asp Ser Pro Glu Arg Asn Leu | |
| 625 630 635 640 | |
| tgg aac ctg aaa cca ttc acc acg cgg gat ttc tcc atc agg tcc ctg | 1968 |
| Trp Asn Leu Lys Pro Phe Thr Thr Arg Asp Phe Ser Ile Arg Ser Leu | |
| 645 650 655 | |
| gct gac cgg ctg ggg gac ctg agc tat ctc atc tat gtg ttt cct gac | 2016 |
| Ala Asp Arg Leu Gly Asp Leu Ser Tyr Leu Ile Tyr Val Phe Pro Asp | |
| 660 665 670 | |
| cgc ccc aag gat gag gtc ttc tcc aag tac tac act cct gtg ctg gct | 2064 |
| Arg Pro Lys Asp Glu Val Phe Ser Lys Tyr Tyr Thr Pro Val Leu Ala | |
| 675 680 685 | |
| aaa gct gtt gat gga tat gtg aaa cca cag atc aag caa gtg gtc cct | 2112 |
| Lys Ala Val Asp Gly Tyr Val Lys Pro Gln Ile Lys Gln Val Val Pro | |
| 690 695 700 | |
| gag ttt gtg aat gca tct gca gat gct ggg ggc agc agc gcc acg tac | 2160 |
| Glu Phe Val Asn Ala Ser Ala Asp Ala Gly Gly Ser Ser Ala Thr Tyr | |
| 705 710 715 720 | |
| atg gac cag gcc ccc tcc cca gct gtg tgc ccc cag gct ccc tat aac | 2208 |
| Met Asp Gln Ala Pro Ser Pro Ala Val Cys Pro Gln Ala Pro Tyr Asn | |
| 725 730 735 | |
| atg tac cca cag aac cct gac cat gta ctc gat cag gat gga gaa ttc | 2256 |
| Met Tyr Pro Gln Asn Pro Asp His Val Leu Asp Gln Asp Gly Glu Phe | |
| 740 745 750 | |
| gac ctg gat gag acc atg gat gtg gcc agg cac gtg gag gaa ctc tta | 2304 |
| Asp Leu Asp Glu Thr Met Asp Val Ala Arg His Val Glu Glu Leu Leu | |
| 755 760 765 | |

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| cgc cga cca atg gac agt ctt gac tcc cgc ctc tcg ccc cct gcc ggt | 2352 |
| Arg Arg Pro Met Asp Ser Leu Asp Ser Arg Leu Ser Pro Pro Ala Gly | |
| 770 775 780 | |
| ctt ttc acc tct gcc aga ggc tcc ctc tca tgg gta ccg cgg gcc cgg | 2400 |
| Leu Phe Thr Ser Ala Arg Gly Ser Leu Ser Trp Val Pro Arg Ala Arg | |
| 785 790 795 800 | |
| gat cca ccg gtc gcc acc atg gtg agc aag ggc gag gag ctg ttc acc | 2448 |
| Asp Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe Thr | |
| 805 810 815 | |
| ggg gtg gtg ccc atc ctg gtc gag ctg gac ggc gac gta aac ggc cac | 2496 |
| Gly Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly His | |
| 820 825 830 | |
| aag ttc agc gtg tcc ggc gag ggc gag ggc gat gcc acc tac ggc aag | 2544 |
| Lys Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys | |
| 835 840 845 | |
| ctg acc ctg aag ttc atc tgc acc acc ggc aag ctg ccc gtg ccc tgg | 2592 |
| Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp | |
| 850 855 860 | |
| ccc acc ctc gtg acc acc ctg acc tac ggc gtg cag tgc ttc agc cgc | 2640 |
| Pro Thr Leu Val Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg | |
| 865 870 875 880 | |
| tac ccc gac cac atg aag cag cac gac ttc ttc aag tcc gcc atg ccc | 2688 |
| Tyr Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro | |
| 885 890 895 | |
| gaa ggc tac gtc cag gag cgc acc atc ttc ttc aag gac gac ggc aac | 2736 |
| Glu Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn | |
| 900 905 910 | |
| tac aag acc cgc gcc gag gtg aag ttc gag ggc gac acc ctg gtg aac | 2784 |
| Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn | |
| 915 920 925 | |
| cgc atc gag ctg aag ggc atc gac ttc aag gag gac ggc aac atc ctg | 2832 |
| Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu | |
| 930 935 940 | |
| ggg cac aag ctg gag tac aac tac aac agc cac aac gtc tat atc atg | 2880 |
| Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met | |
| 945 950 955 960 | |
| gcc gac aag cag aag aac ggc atc aag gtg aac ttc aag atc cgc cac | 2928 |
| Ala Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His | |
| 965 970 975 | |
| aac atc gag gac ggc agc gtg cag ctc gcc gac cac tac cag cag aac | 2976 |
| Asn Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn | |
| 980 985 990 | |
| acc ccc atc ggc gac ggc ccc gtg ctg ctg ccc gac aac cac tac ctg | 3024 |
| Thr Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu | |
| 995 1000 1005 | |
| agc acc cag tcc gcc ctg agc aaa gac ccc aac gag aag cgc gat | 3069 |
| Ser Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp | |
| 1010 1015 1020 | |
| cac atg gtc ctg ctg gag ttc gtg acc gcc gcc ggg atc act ctc | 3114 |
| His Met Val Leu Leu Glu Phe Val Thr Ala Ala Gly Ile Thr Leu | |
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| Gly Met Asp Glu Leu Tyr Lys | |
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| 1 | | | 5 | | | | | | 10 | | | | | 15 | |
| Gln | Met | Gln | Val | Leu | Tyr | Gly | Gln | His | Phe | Pro | Ile | Glu | Val | Arg | His |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Tyr | Leu | Ala | Gln | Trp | Ile | Glu | Ser | Gln | Pro | Trp | Asp | Ala | Ile | Asp | Leu |
| | | 35 | | | | | 40 | | | | | 45 | | | |
| Asp | Asn | Pro | Gln | Asp | Arg | Ala | Gln | Ala | Thr | Gln | Leu | Leu | Glu | Gly | Leu |
| | 50 | | | | | 55 | | | | | 60 | | | | |
| Val | Gln | Glu | Leu | Gln | Lys | Ala | Glu | His | Gln | Val | Gly | Glu | Asp | Gly | |
| 65 | | | | | 70 | | | | 75 | | | | | 80 | |
| Phe | Leu | Leu | Lys | Ile | Lys | Leu | Gly | His | Tyr | Ala | Thr | Gln | Leu | Gln | Lys |
| | | | 85 | | | | | | 90 | | | | | 95 | |
| Thr | Tyr | Asp | Arg | Cys | Pro | Leu | Glu | Leu | Val | Arg | Cys | Ile | Arg | His | Ile |
| | | 100 | | | | | | 105 | | | | | 110 | | |
| Leu | Tyr | Asn | Glu | Gln | Arg | Leu | Val | Arg | Glu | Ala | Asn | Asn | Cys | Ser | Ser |
| | | 115 | | | | | 120 | | | | | 125 | | | |
| Pro | Ala | Gly | Ile | Leu | Val | Asp | Ala | Met | Ser | Gln | Lys | His | Leu | Gln | Ile |
| | | 130 | | | | 135 | | | | | | 140 | | | |
| Asn | Gln | Thr | Phe | Glu | Glu | Leu | Arg | Leu | Val | Thr | Gln | Asp | Thr | Glu | Asn |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 |
| Glu | Leu | Lys | Lys | Leu | Gln | Gln | Thr | Gln | Glu | Tyr | Phe | Ile | Ile | Gln | Tyr |
| | | | 165 | | | | | | 170 | | | | | 175 | |
| Gln | Glu | Ser | Leu | Arg | Ile | Gln | Ala | Gln | Phe | Ala | Gln | Leu | Ala | Gln | Leu |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Ser | Pro | Gln | Glu | Arg | Leu | Ser | Arg | Glu | Thr | Ala | Leu | Gln | Gln | Lys | Gln |
| | | 195 | | | | | 200 | | | | | 205 | | | |
| Val | Ser | Leu | Glu | Ala | Trp | Leu | Gln | Arg | Glu | Ala | Gln | Thr | Leu | Gln | Gln |
| | | 210 | | | | | 215 | | | | | 220 | | | |
| Tyr | Arg | Val | Glu | Leu | Ala | Glu | Lys | His | Gln | Lys | Thr | Leu | Gln | Leu | Leu |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| Arg | Lys | Gln | Gln | Thr | Ile | Ile | Leu | Asp | Asp | Glu | Leu | Ile | Gln | Trp | Lys |
| | | | 245 | | | | | | 250 | | | | | 255 | |
| Arg | Arg | Gln | Gln | Leu | Ala | Gly | Asn | Gly | Gly | Pro | Pro | Glu | Gly | Ser | Leu |
| | | | 260 | | | | 265 | | | | | | 270 | | |
| Asp | Val | Leu | Gln | Ser | Trp | Cys | Glu | Lys | Leu | Ala | Glu | Ile | Ile | Trp | Gln |
| | | 275 | | | | 280 | | | | | | 285 | | | |
| Asn | Arg | Gln | Gln | Ile | Arg | Arg | Ala | Glu | His | Leu | Cys | Gln | Gln | Leu | Pro |
| | | 290 | | | | 295 | | | | | 300 | | | | |
| Ile | Pro | Gly | Pro | Val | Glu | Met | Leu | Ala | Glu | Val | Asn | Ala | Thr | Ile | |
| 305 | | | | | 310 | | | | | 315 | | | | 320 | |
| Thr | Asp | Ile | Ile | Ser | Ala | Leu | Val | Thr | Ser | Thr | Phe | Ile | Ile | Glu | Lys |
| | | | 325 | | | | | | 330 | | | | | 335 | |
| Gln | Pro | Pro | Gln | Val | Leu | Lys | Thr | Gln | Thr | Lys | Phe | Ala | Ala | Thr | Val |
| | | | 340 | | | | | 345 | | | | | 350 | | |
| Arg | Leu | Leu | Val | Gly | Gly | Lys | Leu | Asn | Val | His | Met | Asn | Pro | Pro | Gln |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Val | Lys | Ala | Thr | Ile | Ile | Ser | Glu | Gln | Gln | Ala | Lys | Ser | Leu | Leu | Lys |
| | | 370 | | | | 375 | | | | | 380 | | | | |
| Asn | Glu | Asn | Thr | Arg | Asn | Glu | Cys | Ser | Gly | Glu | Ile | Leu | Asn | Asn | Cys |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Cys | Val | Met | Glu | Tyr | His | Gln | Ala | Thr | Gly | Thr | Leu | Ser | Ala | His | Phe |
| | | | 405 | | | | | | 410 | | | | | 415 | |
| Arg | Asn | Met | Ser | Leu | Lys | Arg | Ile | Lys | Arg | Ala | Asp | Arg | Arg | Gly | Ala |
| | | | 420 | | | | | 425 | | | | | 430 | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Ser | Val | Thr | Glu | Glu | Lys | Phe | Thr | Val | Leu | Phe | Glu | Ser | Gln | Phe |
| | | 435 | | | | | 440 | | | | | 445 | | | |
| Ser | Val | Gly | Ser | Asn | Glu | Leu | Val | Phe | Gln | Val | Lys | Thr | Leu | Ser | Leu |
| | 450 | | | | | 455 | | | | | 460 | | | | |
| Pro | Val | Val | Val | Ile | Val | His | Gly | Ser | Gln | Asp | His | Asn | Ala | Thr | Ala |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 |
| Thr | Val | Leu | Trp | Asp | Asn | Ala | Phe | Ala | Glu | Pro | Gly | Arg | Val | Pro | Phe |
| | | | | 485 | | | | | 490 | | | | | 495 | |
| Ala | Val | Pro | Asp | Lys | Val | Leu | Trp | Pro | Gln | Leu | Cys | Glu | Ala | Leu | Asn |
| | | | 500 | | | | | 505 | | | | | 510 | | |
| Met | Lys | Phe | Lys | Ala | Glu | Val | Gln | Ser | Asn | Arg | Gly | Leu | Thr | Lys | Glu |
| | | 515 | | | | | 520 | | | | | 525 | | | |
| Asn | Leu | Val | Phe | Leu | Ala | Gln | Lys | Leu | Phe | Asn | Asn | Ser | Ser | Ser | His |
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| Leu | Glu | Asp | Tyr | Ser | Gly | Leu | Ser | Val | Ser | Trp | Ser | Gln | Phe | Asn | Arg |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 |
| Glu | Asn | Leu | Pro | Gly | Trp | Asn | Tyr | Thr | Phe | Trp | Gln | Trp | Phe | Asp | Gly |
| | | | | 565 | | | | | 570 | | | | | 575 | |
| Val | Met | Glu | Val | Leu | Lys | Lys | His | His | Lys | Pro | His | Trp | Asn | Asp | Gly |
| | | | 580 | | | | | 585 | | | | | 590 | | |
| Ala | Ile | Leu | Gly | Phe | Val | Asn | Lys | Gln | Gln | Ala | His | Asp | Leu | Leu | Ile |
| | | 595 | | | | | 600 | | | | | 605 | | | |
| Asn | Lys | Pro | Asp | Gly | Thr | Phe | Leu | Leu | Arg | Phe | Ser | Asp | Ser | Glu | Ile |
| | 610 | | | | | 615 | | | | | 620 | | | | |
| Gly | Gly | Ile | Thr | Ile | Ala | Trp | Lys | Phe | Asp | Ser | Pro | Glu | Arg | Asn | Leu |
| 625 | | | | | 630 | | | | | 635 | | | | | 640 |
| Trp | Asn | Leu | Lys | Pro | Phe | Thr | Thr | Arg | Asp | Phe | Ser | Ile | Arg | Ser | Leu |
| | | | | 645 | | | | | 650 | | | | | 655 | |
| Ala | Asp | Arg | Leu | Gly | Asp | Leu | Ser | Tyr | Leu | Ile | Tyr | Val | Phe | Pro | Asp |
| | | | 660 | | | | | 665 | | | | | 670 | | |
| Arg | Pro | Lys | Asp | Glu | Val | Phe | Ser | Lys | Tyr | Tyr | Thr | Pro | Val | Leu | Ala |
| | | 675 | | | | | 680 | | | | | 685 | | | |
| Lys | Ala | Val | Asp | Gly | Tyr | Val | Lys | Pro | Gln | Ile | Lys | Gln | Val | Val | Pro |
| | 690 | | | | | 695 | | | | | 700 | | | | |
| Glu | Phe | Val | Asn | Ala | Ser | Ala | Asp | Ala | Gly | Gly | Ser | Ser | Ala | Thr | Tyr |
| 705 | | | | | 710 | | | | | 715 | | | | | 720 |
| Met | Asp | Gln | Ala | Pro | Ser | Pro | Ala | Val | Cys | Pro | Gln | Ala | Pro | Tyr | Asn |
| | | | 725 | | | | | | 730 | | | | | 735 | |
| Met | Tyr | Pro | Gln | Asn | Pro | Asp | His | Val | Leu | Asp | Gln | Asp | Gly | Glu | Phe |
| | | | 740 | | | | | 745 | | | | | 750 | | |
| Asp | Leu | Asp | Glu | Thr | Met | Asp | Val | Ala | Arg | His | Val | Glu | Glu | Leu | Leu |
| | 755 | | | | | | 760 | | | | | 765 | | | |
| Arg | Arg | Pro | Met | Asp | Ser | Leu | Asp | Ser | Arg | Leu | Ser | Pro | Pro | Ala | Gly |
| | 770 | | | | | 775 | | | | | 780 | | | | |
| Leu | Phe | Thr | Ser | Ala | Arg | Gly | Ser | Leu | Ser | Trp | Val | Pro | Arg | Ala | Arg |
| 785 | | | | | 790 | | | | | 795 | | | | | 800 |
| Asp | Pro | Pro | Val | Ala | Thr | Met | Val | Ser | Lys | Gly | Glu | Glu | Leu | Phe | Thr |
| | | | | 805 | | | | | 810 | | | | | 815 | |
| Gly | Val | Val | Pro | Ile | Leu | Val | Glu | Leu | Asp | Gly | Asp | Val | Asn | Gly | His |
| | | | 820 | | | | | 825 | | | | | 830 | | |
| Lys | Phe | Ser | Val | Ser | Gly | Glu | Gly | Glu | Gly | Asp | Ala | Thr | Tyr | Gly | Lys |
| | | 835 | | | | | 840 | | | | | 845 | | | |
| Leu | Thr | Leu | Lys | Phe | Ile | Cys | Thr | Thr | Gly | Lys | Leu | Pro | Val | Pro | Trp |
| | 850 | | | | | 855 | | | | | 860 | | | | |
| Pro | Thr | Leu | Val | Thr | Thr | Leu | Thr | Tyr | Gly | Val | Gln | Cys | Phe | Ser | Arg |
| 865 | | | | | 870 | | | | | 875 | | | | | 880 |
| Tyr | Pro | Asp | His | Met | Lys | Gln | His | Asp | Phe | Phe | Lys | Ser | Ala | Met | Pro |
| | | | | 885 | | | | | 890 | | | | | 895 | |
| Glu | Gly | Tyr | Val | Gln | Glu | Arg | Thr | Ile | Phe | Phe | Lys | Asp | Asp | Gly | Asn |
| | | | 900 | | | | | 905 | | | | | 910 | | |
| Tyr | Lys | Thr | Arg | Ala | Glu | Val | Lys | Phe | Glu | Gly | Asp | Thr | Leu | Val | Asn |
| | | 915 | | | | | 920 | | | | | 925 | | | |
| Arg | Ile | Glu | Leu | Lys | Gly | Ile | Asp | Phe | Lys | Glu | Asp | Gly | Asn | Ile | Leu |

| | | | | |
|---|------|------|------|------|
| 930 | | 935 | | 940 |
| Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met | | | | |
| 945 | | 950 | | 955 |
| Ala Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His | | | | 960 |
| | 965 | | 970 | 975 |
| Asn Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn | | | | |
| | 980 | | 985 | 990 |
| Thr Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu | | | | |
| | 995 | | 1000 | 1005 |
| Ser Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp | | | | |
| 1010 | | 1015 | | 1020 |
| His Met Val Leu Leu Glu Phe Val Thr Ala Ala Gly Ile Thr Leu | | | | |
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| Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu | | |
| 1 5 10 15 | | |
| gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc | | 96 |
| Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly | | |
| 20 25 30 | | |
| gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc | | 144 |
| Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile | | |
| 35 40 45 | | |
| tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc | | 192 |
| Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr | | |
| 50 55 60 | | |
| ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag | | 240 |
| Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys | | |
| 65 70 75 80 | | |
| cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag | | 288 |
| Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu | | |
| 85 90 95 | | |
| cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag | | 336 |
| Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu | | |
| 100 105 110 | | |

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| gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc | 384 |
| Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly | |
| 115 120 125 | |
| atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac | 432 |
| Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr | |
| 130 135 140 | |
| aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac | 480 |
| Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn | |
| 145 150 155 160 | |
| ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc | 528 |
| Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser | |
| 165 170 175 | |
| gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc | 576 |
| Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly | |
| 180 185 190 | |
| ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg | 624 |
| Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu | |
| 195 200 205 | |
| agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc | 672 |
| Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe | |
| 210 215 220 | |
| gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc | 720 |
| Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser | |
| 225 230 235 240 | |
| gga ctc aga tct cga gct caa gct tcg aat tcg gcg atg cca gac ccc | 768 |
| Gly Leu Arg Ser Arg Ala Gln Ala Ser Asn Ser Ala Met Pro Asp Pro | |
| 245 250 255 | |
| gcg gcg cac ctg ccc ttc ttc tac ggc agc atc tcg cgt gcc gag gcc | 816 |
| Ala Ala His Leu Pro Phe Phe Tyr Gly Ser Ile Ser Arg Ala Glu Ala | |
| 260 265 270 | |
| gag gag cac ctg aag ctg gcg ggc atg gcg gac ggg ctc ttc ctg ctg | 864 |
| Glu Glu His Leu Lys Leu Ala Gly Met Ala Asp Gly Leu Phe Leu Leu | |
| 275 280 285 | |
| cgc cag tgc ctg cgc tcg ctg ggc tat gtg ctg tcg ctc gtg cac | 912 |
| Arg Gln Cys Leu Arg Ser Leu Gly Gly Tyr Val Leu Ser Leu Val His | |
| 290 295 300 | |
| gat gtg cgc ttc cac cac ttt ccc atc gag cgc cag ctc aac ggc acc | 960 |
| Asp Val Arg Phe His His Phe Pro Ile Glu Arg Gln Leu Asn Gly Thr | |
| 305 310 315 320 | |
| tac gcc att gcc ggc ggc aaa gcg cac tgt gga ccg gca gag ctc tgc | 1008 |
| Tyr Ala Ile Ala Gly Gly Lys Ala His Cys Gly Pro Ala Glu Leu Cys | |
| 325 330 335 | |
| gag ttc tac tcg cgc gac ccc gac ggg ctg ccc tgc aac ctg cgc aag | 1056 |
| Glu Phe Tyr Ser Arg Asp Pro Asp Gly Leu Pro Cys Asn Leu Arg Lys | |
| 340 345 350 | |
| ccg tgc aac ccg ccg tcg ggc ctc gag ccg cag ccg ggg gtc ttc gac | 1104 |
| Pro Cys Asn Arg Pro Ser Gly Leu Glu Pro Gln Pro Gly Val Phe Asp | |
| 355 360 365 | |
| tgc ctg cga gac gcc atg gtg cgt gac tac gtg cgc cag acg tgg aag | 1152 |
| Cys Leu Arg Asp Ala Met Val Arg Asp Tyr Val Arg Gln Thr Trp Lys | |
| 370 375 380 | |
| ctg gag ggc gag gcc ctg gag cag gcc atc atc agc cag gcc ccg cag | 1200 |
| Leu Glu Gly Glu Ala Leu Glu Gln Ala Ile Ile Ser Gln Ala Pro Gln | |
| 385 390 395 400 | |
| gtg gag aag ctc att gct acg acg gcc cac gag ccg atg ccc tgg tac | 1248 |
| Val Glu Lys Leu Ile Ala Thr Thr Ala His Glu Arg Met Pro Trp Tyr | |
| 405 410 415 | |
| cac agc agc ctg acg cgt gag gag gcc gag cgc aaa ctt tac tct ggg | 1296 |
| His Ser Ser Leu Thr Arg Glu Glu Ala Glu Arg Lys Leu Tyr Ser Gly | |
| 420 425 430 | |
| gcg cag acc gac ggc aag ttc ctg ctg agg ccg ccg aag gag cag ggc | 1344 |
| Ala Gln Thr Asp Gly Lys Phe Leu Leu Arg Pro Arg Lys Glu Gln Gly | |
| 435 440 445 | |

| | |
|---|------|
| aca tac gcc ctg tcc ctc atc tat ggg aag acg gtg tac cac tac ctc | 1392 |
| Thr Tyr Ala Leu Ser Leu Ile Tyr Gly Lys Thr Val Tyr His Tyr Leu | |
| 450 455 460 | |
| atc agc caa gac aag gcg ggc aag tac tgc att ccc gag ggc acc aag | 1440 |
| Ile Ser Gln Asp Lys Ala Gly Lys Tyr Cys Ile Pro Glu Gly Thr Lys | |
| 465 470 475 480 | |
| ttt gac acg ctc tgg cag ctg gtg gag tat ctg aag ctg aag gcg gac | 1488 |
| Phe Asp Thr Leu Trp Gln Leu Val Glu Tyr Leu Lys Leu Lys Ala Asp | |
| 485 490 495 | |
| ggg ctc atc tac tgc ctg aag gag gcc tgc ccc aac agc agt gcc agc | 1536 |
| Gly Leu Ile Tyr Cys Leu Lys Glu Ala Cys Pro Asn Ser Ser Ala Ser | |
| 500 505 510 | |
| aac gcc tca ggg gct gct gct ccc aca ctc cca gcc cac cca tcc acg | 1584 |
| Asn Ala Ser Gly Ala Ala Ala Pro Thr Leu Pro Ala His Pro Ser Thr | |
| 515 520 525 | |
| ttg act cat cct cag aga cga atc gac acc ctc aac tca gat gga tac | 1632 |
| Leu Thr His Pro Gln Arg Arg Ile Asp Thr Leu Asn Ser Asp Gly Tyr | |
| 530 535 540 | |
| acc cct gag cca gca cgc ata acg tcc cca gac aaa ccg cgg ccg atg | 1680 |
| Thr Pro Glu Pro Ala Arg Ile Thr Ser Pro Asp Lys Pro Arg Pro Met | |
| 545 550 555 560 | |
| ccc atg gac acg agc gtg tat gag agc ccc tac agc gac cca gag gag | 1728 |
| Pro Met Asp Thr Ser Val Tyr Glu Ser Pro Tyr Ser Asp Pro Glu Glu | |
| 565 570 575 | |
| ctc aag gac aag aag ctc ttc ctg aag cgc gat aac ctc ctc ata gct | 1776 |
| Leu Lys Asp Lys Lys Leu Phe Leu Lys Arg Asp Asn Leu Leu Ile Ala | |
| 580 585 590 | |
| gac att gaa ctt ggc tgc ggc aac ttt ggc tca gtg cgc cag ggc gtg | 1824 |
| Asp Ile Glu Leu Gly Cys Gly Asn Phe Gly Ser Val Arg Gln Gly Val | |
| 595 600 605 | |
| tac cgc atg cgc aag aag cag atc gac gtg gcc atc aag gtg ctg aag | 1872 |
| Tyr Arg Met Arg Lys Lys Gln Ile Asp Val Ala Ile Lys Val Leu Lys | |
| 610 615 620 | |
| cag ggc acg gag aag gca gac acg gaa gag atg atg cgc gag gcg cag | 1920 |
| Gln Gly Thr Glu Lys Ala Asp Thr Glu Glu Met Met Arg Glu Ala Gln | |
| 625 630 635 640 | |
| atc atg cac cag ctg gac aac ccc tac atc gtg cgg ctc att ggc gtc | 1968 |
| Ile Met His Gln Leu Asp Asn Pro Tyr Ile Val Arg Leu Ile Gly Val | |
| 645 650 655 | |
| tgc cag gcc gag gcc ctc atg ctg gtc atg gag atg gct ggg ggc ggg | 2016 |
| Cys Gln Ala Glu Ala Leu Met Leu Val Met Glu Met Ala Gly Gly Gly | |
| 660 665 670 | |
| ccg ctg cac aag ttc ctg gtc ggc aag agg gag gag atc cct gtg agc | 2064 |
| Pro Leu His Lys Phe Leu Val Gly Lys Arg Glu Glu Ile Pro Val Ser | |
| 675 680 685 | |
| aat gtg gcc gag ctg ctg cac cag gtg tcc atg ggg atg aag tac ctg | 2112 |
| Asn Val Ala Glu Leu Leu His Gln Val Ser Met Gly Met Lys Tyr Leu | |
| 690 695 700 | |
| gag gag aag aac ttt gtg cac cgt gac ctg gcg gcc cgc aac gtc ctg | 2160 |
| Glu Glu Lys Asn Phe Val His Arg Asp Leu Ala Ala Arg Asn Val Leu | |
| 705 710 715 720 | |
| ctg gtt aac cgg cac tac gcc aag atc agc gac ttt ggc ctc tcc aaa | 2208 |
| Leu Val Asn Arg His Tyr Ala Lys Ile Ser Asp Phe Gly Leu Ser Lys | |
| 725 730 735 | |
| gca ctg ggt gcc gac gac agc tac tac act gcc cgc tca gca ggg aag | 2256 |
| Ala Leu Gly Ala Asp Asp Ser Tyr Thr Ala Arg Ser Ala Gly Lys | |
| 740 745 750 | |
| tgg ccg ctc aag tgg tac gca ccc gaa tgc atc aac ttc cgc aag ttc | 2304 |
| Trp Pro Leu Lys Trp Tyr Ala Pro Glu Cys Ile Asn Phe Arg Lys Phe | |
| 755 760 765 | |
| tcc agc cgc agc gat gtc tgg agc tat ggg gtc acc atg tgg gag gcc | 2352 |
| Ser Ser Arg Ser Asp Val Trp Ser Tyr Gly Val Thr Met Trp Glu Ala | |
| 770 775 780 | |

[illegible]

| | | | | | | | | | | | | | | | | |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|-----|-----|-----|-----|--|-----|
| <400> | 109 | | | | | | | | | | | | | | | |
| Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu | | | | | | | | | | | | | | | | |
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| Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly | | | | | | | | | | | | | | | | |
| | | | 20 | | | | | 25 | | | | | 30 | | | |
| Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile | | | | | | | | | | | | | | | | |
| | | 35 | | | | | 40 | | | | | 45 | | | | |
| Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr | | | | | | | | | | | | | | | | |
| | 50 | | | | | 55 | | | | | 60 | | | | | |
| Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys | | | | | | | | | | | | | | | | |
| 65 | | | | | 70 | | | | 75 | | | | | | | 80 |
| Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu | | | | | | | | | | | | | | | | |
| | | | | 85 | | | | 90 | | | | | 95 | | | |
| Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu | | | | | | | | | | | | | | | | |
| | | | 100 | | | | | 105 | | | | | 110 | | | |
| Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly | | | | | | | | | | | | | | | | |
| | | 115 | | | | | 120 | | | | | 125 | | | | |
| Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr | | | | | | | | | | | | | | | | |
| | 130 | | | | | 135 | | | | | 140 | | | | | |
| Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn | | | | | | | | | | | | | | | | |
| 145 | | | | | 150 | | | | 155 | | | | | | | 160 |
| Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser | | | | | | | | | | | | | | | | |
| | | | | 165 | | | | 170 | | | | | | 175 | | |
| Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly | | | | | | | | | | | | | | | | |
| | | | 180 | | | | | 185 | | | | | 190 | | | |
| Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu | | | | | | | | | | | | | | | | |
| | 195 | | | | | 200 | | | | | | 205 | | | | |
| Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe | | | | | | | | | | | | | | | | |
| | 210 | | | | | 215 | | | | | 220 | | | | | |

Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225 230 235 240
Gly Leu Arg Ser Arg Ala Gln Ala Ser Asn Ser Ala Met Pro Asp Pro
245 250 255
Ala Ala His Leu Pro Phe Phe Tyr Gly Ser Ile Ser Arg Ala Glu Ala
260 265 270
Glu Glu His Leu Lys Leu Ala Gly Met Ala Asp Gly Leu Phe Leu Leu
275 280 285
Arg Gln Cys Leu Arg Ser Leu Gly Gly Tyr Val Leu Ser Leu Val His
290 295 300
Asp Val Arg Phe His His Phe Pro Ile Glu Arg Gln Leu Asn Gly Thr
305 310 315 320
Tyr Ala Ile Ala Gly Gly Lys Ala His Cys Gly Pro Ala Glu Leu Cys
325 330 335
Glu Phe Tyr Ser Arg Asp Pro Asp Gly Leu Pro Cys Asn Leu Arg Lys
340 345 350
Pro Cys Asn Arg Pro Ser Gly Leu Glu Pro Gln Pro Gly Val Phe Asp
355 360 365
Cys Leu Arg Asp Ala Met Val Arg Asp Tyr Val Arg Gln Thr Trp Lys
370 375 380
Leu Glu Gly Glu Ala Leu Glu Gln Ala Ile Ile Ser Gln Ala Pro Gln
385 390 395 400
Val Glu Lys Leu Ile Ala Thr Thr Ala His Glu Arg Met Pro Trp Tyr
405 410 415
His Ser Ser Leu Thr Arg Glu Glu Ala Glu Arg Lys Leu Tyr Ser Gly
420 425 430
Ala Gln Thr Asp Gly Lys Phe Leu Arg Pro Arg Lys Glu Gln Gly
435 440 445
Thr Tyr Ala Leu Ser Leu Ile Tyr Gly Lys Thr Val Tyr His Tyr Leu
450 455 460
Ile Ser Gln Asp Lys Ala Gly Lys Tyr Cys Ile Pro Glu Gly Thr Lys
465 470 475 480
Phe Asp Thr Leu Trp Gln Leu Val Glu Tyr Leu Lys Leu Lys Ala Asp
485 490 495
Gly Leu Ile Tyr Cys Leu Lys Glu Ala Cys Pro Asn Ser Ser Ala Ser
500 505 510
Asn Ala Ser Gly Ala Ala Ala Pro Thr Leu Pro Ala His Pro Ser Thr
515 520 525
Leu Thr His Pro Gln Arg Arg Ile Asp Thr Leu Asn Ser Asp Gly Tyr
530 535 540
Thr Pro Glu Pro Ala Arg Ile Thr Ser Pro Asp Lys Pro Arg Pro Met
545 550 555 560
Pro Met Asp Thr Ser Val Tyr Glu Ser Pro Tyr Ser Asp Pro Glu Glu
565 570 575
Leu Lys Asp Lys Lys Leu Phe Leu Lys Arg Asp Asn Leu Leu Ile Ala
580 585 590
Asp Ile Glu Leu Gly Cys Gly Asn Phe Gly Ser Val Arg Gln Gly Val
595 600 605
Tyr Arg Met Arg Lys Lys Gln Ile Asp Val Ala Ile Lys Val Leu Lys
610 615 620
Gln Gly Thr Glu Lys Ala Asp Thr Glu Glu Met Met Arg Glu Ala Gln
625 630 635 640
Ile Met His Gln Leu Asp Asn Pro Tyr Ile Val Arg Leu Ile Gly Val
645 650 655
Cys Gln Ala Glu Ala Leu Met Leu Val Met Glu Met Ala Gly Gly Gly
660 665 670
Pro Leu His Lys Phe Leu Val Gly Lys Arg Glu Glu Ile Pro Val Ser
675 680 685
Asn Val Ala Glu Leu Leu His Gln Val Ser Met Gly Met Lys Tyr Leu
690 695 700
Glu Glu Lys Asn Phe Val His Arg Asp Leu Ala Arg Asn Val Leu
705 710 715 720
Leu Val Asn Arg His Tyr Ala Lys Ile Ser Asp Phe Gly Leu Ser Lys

| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|--|
| Ile | Pro | Val | Ser | Asn | Val | Ala | Glu | Leu | Leu | His | Gln | Val | Ser | Met | Gly | | |
| | | 435 | | | | | 440 | | | | | 445 | | | | | |
| atg | aag | tac | ctg | gag | gag | aag | aac | ttt | gtg | cac | cgt | gac | ctg | gcg | gcc | 1392 | |
| Met | Lys | Tyr | Leu | Glu | Glu | Lys | Asn | Phe | Val | His | Arg | Asp | Leu | Ala | Ala | | |
| | | 450 | | | | | 455 | | | | | 460 | | | | | |
| cgc | aac | gtc | ctg | ctg | gtt | aac | cgg | cac | tac | gcc | aag | atc | agc | gac | ttt | 1440 | |
| Arg | Asn | Val | Leu | Leu | Val | Asn | Arg | His | Tyr | Ala | Lys | Ile | Ser | Asp | Phe | | |
| | | 465 | | | | | 470 | | | | 475 | | | | 480 | | |
| ggc | ctc | tcc | aaa | gca | ctg | ggt | gcc | gac | gac | agc | tac | tac | act | gcc | cgc | 1488 | |
| Gly | Leu | Ser | Lys | Ala | Leu | Gly | Ala | Asp | Asp | Ser | Tyr | Tyr | Thr | Ala | Arg | | |
| | | | | 485 | | | | | | | 490 | | | | 495 | | |
| tca | gca | ggg | aag | tgg | ccg | ctc | aag | tgg | tac | gca | ccc | gaa | tgc | atc | aac | 1536 | |
| Ser | Ala | Gly | Lys | Trp | Pro | Leu | Lys | Trp | Tyr | Ala | Pro | Glu | Cys | Ile | Asn | | |
| | | | 500 | | | | | 505 | | | | | 510 | | | | |
| ttc | cgc | aag | ttc | tcc | agc | cgc | agc | gat | gtc | tgg | agc | tat | ggg | gtc | acc | 1584 | |
| Phe | Arg | Lys | Phe | Ser | Ser | Arg | Ser | Asp | Val | Trp | Ser | Tyr | Gly | Val | Thr | | |
| | | 515 | | | | | 520 | | | | | 525 | | | | | |
| atg | tgg | gag | gcc | ttg | tcc | tac | ggc | cag | aag | ccc | tac | aag | aag | atg | aaa | 1632 | |
| Met | Trp | Glu | Ala | Leu | Ser | Tyr | Gly | Gln | Lys | Pro | Tyr | Lys | Lys | Met | Lys | | |
| | | 530 | | | | | 535 | | | | 540 | | | | | | |
| ggg | ccg | gag | gtc | atg | gcc | ttc | atc | gag | cag | ggc | aag | cgg | atg | gag | tgc | 1680 | |
| Gly | Pro | Glu | Val | Met | Ala | Phe | Ile | Glu | Gln | Gly | Lys | Arg | Met | Glu | Cys | | |
| | | | | | | 550 | | | | 555 | | | | | 560 | | |
| cca | cca | gag | tgt | cca | ccc | gaa | ctg | tac | gca | ctc | atg | agt | gac | tgc | tgg | 1728 | |
| Pro | Pro | Glu | Cys | Pro | Pro | Glu | Leu | Tyr | Ala | Leu | Met | Ser | Asp | Cys | Trp | | |
| | | | | 565 | | | | | 570 | | | | | 575 | | | |
| atc | tac | aag | tgg | gag | gat | cgc | ccc | gac | ttc | ctg | acc | gtg | gag | cag | cgc | 1776 | |
| Ile | Tyr | Lys | Trp | Glu | Asp | Arg | Pro | Asp | Phe | Leu | Thr | Val | Glu | Gln | Arg | | |
| | | | 580 | | | | | 585 | | | | | 590 | | | | |
| atg | cga | gcc | tgt | tac | tac | agc | ctg | gcc | agc | aag | gtg | gaa | ggg | ccc | cca | 1824 | |
| Met | Arg | Ala | Cys | Tyr | Tyr | Ser | Leu | Ala | Ser | Lys | Val | Glu | Gly | Pro | Pro | | |
| | | 595 | | | | | 600 | | | | | 605 | | | | | |
| ggc | agc | aca | cag | aag | gct | gag | gct | gcc | tgt | gcc | tgg | gat | cca | ccg | gtc | 1872 | |
| Gly | Ser | Thr | Gln | Lys | Ala | Glu | Ala | Ala | Cys | Ala | Trp | Asp | Pro | Pro | Val | | |
| | | 610 | | | | | 615 | | | | 620 | | | | | | |
| gcc | acc | atg | gtg | agc | aag | ggc | gag | gag | ctg | ttc | acc | ggg | gtg | gtg | ccc | 1920 | |
| Ala | Thr | Met | Val | Ser | Lys | Gly | Glu | Glu | Leu | Phe | Thr | Gly | Val | Val | Pro | | |
| | | | | | 630 | | | | | 635 | | | | | 640 | | |
| atc | ctg | gtc | gag | ctg | gac | ggc | gac | gta | aac | ggc | cac | aag | ttc | agc | gtg | 1968 | |
| Ile | Leu | Val | Glu | Leu | Asp | Gly | Asp | Val | Asn | Gly | His | Lys | Phe | Ser | Val | | |
| | | | | 645 | | | | | 650 | | | | | 655 | | | |
| tcc | ggc | gag | ggc | gag | ggc | gat | gcc | acc | tac | ggc | aag | ctg | acc | ctg | aag | 2016 | |
| Ser | Gly | Glu | Gly | Glu | Gly | Asp | Ala | Thr | Tyr | Gly | Lys | Leu | Thr | Leu | Lys | | |
| | | | 660 | | | | 665 | | | | | 670 | | | | | |
| ttc | atc | tgc | acc | ggc | aag | ctg | ccc | gtg | ccc | tgg | ccc | acc | ctc | gtg | | 2064 | |
| Phe | Ile | Cys | Thr | Thr | Gly | Lys | Leu | Pro | Val | Pro | Trp | Pro | Thr | Leu | Val | | |
| | | 675 | | | | | 680 | | | | | 685 | | | | | |
| acc | acc | ctg | acc | tac | ggc | gtg | cag | tgc | ttc | agc | cgc | tac | ccc | gac | cac | 2112 | |
| Thr | Thr | Leu | Thr | Tyr | Gly | Val | Gln | Cys | Phe | Ser | Arg | Tyr | Pro | Asp | His | | |
| | | 690 | | | | 695 | | | | 700 | | | | | | | |
| atg | aag | cag | cac | gac | ttc | ttc | aag | tcc | gcc | atg | ccc | gaa | ggc | tac | gtc | 2160 | |
| Met | Lys | Gln | His | Asp | Phe | Phe | Lys | Ser | Ala | Met | Pro | Glu | Gly | Tyr | Val | | |
| | | | | | 710 | | | | 715 | | | | | 720 | | | |
| cag | gag | cgc | acc | atc | ttc | ttc | aag | gac | gac | ggc | aac | tac | aag | acc | cgc | 2208 | |
| Gln | Glu | Arg | Thr | Ile | Phe | Phe | Lys | Asp | Asp | Gly | Asn | Tyr | Lys | Thr | Arg | | |
| | | | | 725 | | | | | 730 | | | | | 735 | | | |
| gcc | gag | gtg | aag | ttc | gag | ggc | gac | acc | ctg | gtg | aac | cgc | atc | gag | ctg | 2256 | |
| Ala | Glu | Val | Lys | Phe | Glu | Gly | Asp | Thr | Leu | Val | Asn | Arg | Ile | Glu | Leu | | |
| | | | 740 | | | | | 745 | | | | 750 | | | | | |
| aag | ggc | atc | gac | ttc | aag | gag | gac | ggc | aac | atc | ctg | ggg | cac | aag | ctg | 2304 | |
| Lys | Gly | Ile | Asp | Phe | Lys | Glu | Asp | Gly | Asn | Ile | Leu | Gly | His | Lys | Leu | | |
| | | 755 | | | | | 760 | | | | 765 | | | | | | |
| gag | tac | aac | tac | aac | agc | cac | aac | gtc | tat | atc | atg | gcc | gac | aag | cag | 2352 | |

| | |
|---|------|
| Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln | |
| 770 775 780 | |
| aag aac ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac | 2400 |
| Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp | |
| 785 790 795 800 | |
| ggc agc gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc | 2448 |
| Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly | |
| 805 810 815 | |
| gac ggc ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc | 2496 |
| Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser | |
| 820 825 830 | |
| gcc ctg agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg | 2544 |
| Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu | |
| 835 840 845 | |
| gag ttc gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac | 2592 |
| Glu Phe Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr | |
| 850 855 860 | |
| aag taa | 2598 |
| Lys | |
| 865 | |

<210> 111

<211> 865

<212> PRT

<213> Artificial Sequence

<220>

<223> Zap70-EGFP fusion

<400> 111

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| Arg Ala Glu Ala Glu Glu His Leu Lys Leu Ala Gly Met Ala Asp Gly | |
| 20 25 30 | |
| Leu Phe Leu Leu Arg Gln Cys Leu Arg Ser Leu Gly Gly Tyr Val Leu | |
| 35 40 45 | |
| Ser Leu Val His Asp Val Arg Phe His His Phe Pro Ile Glu Arg Gln | |
| 50 55 60 | |
| Leu Asn Gly Thr Tyr Ala Ile Ala Gly Gly Lys Ala His Cys Gly Pro | |
| 65 70 75 80 | |
| Ala Glu Leu Cys Glu Phe Tyr Ser Arg Asp Pro Asp Gly Leu Pro Cys | |
| 85 90 95 | |
| Asn Leu Arg Lys Pro Cys Asn Arg Pro Ser Gly Leu Glu Pro Gln Pro | |
| 100 105 110 | |
| Gly Val Phe Asp Cys Leu Arg Asp Ala Met Val Arg Asp Tyr Val Arg | |
| 115 120 125 | |
| Gln Thr Trp Lys Leu Glu Gly Glu Ala Leu Glu Gln Ala Ile Ile Ser | |
| 130 135 140 | |
| Gln Ala Pro Gln Val Glu Lys Leu Ile Ala Thr Thr Ala His Glu Arg | |
| 145 150 155 160 | |
| Met Pro Trp Tyr His Ser Ser Leu Thr Arg Glu Glu Ala Glu Arg Lys | |
| 165 170 175 | |
| Leu Tyr Ser Gly Ala Gln Thr Asp Gly Lys Phe Leu Leu Arg Pro Arg | |
| 180 185 190 | |
| Lys Glu Gln Gly Thr Tyr Ala Leu Ser Leu Ile Tyr Gly Lys Thr Val | |

Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val
 705 710 715 720
 Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg
 725 730 735
 Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu
 740 745 750
 Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu
 755 760 765
 Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln
 770 775 780
 Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp
 785 790 795 800
 Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly
 805 810 815
 Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser
 820 825 830
 Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu
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 Glu Phe Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr
 850 855 860
 Lys
 865

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<211> 1635

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<220>

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 gtt gtg tac aaa gcc aga aac aag ttg acg gga gag gtg gtg gcg ctt 96
 Val Val Tyr Lys Ala Arg Asn Lys Leu Thr Gly Glu Val Val Ala Leu
 20 25 30
 aag aaa atc cgc ctg gac act gag act gag ggt gtg ccc agt act gcc 144
 Lys Lys Ile Arg Leu Asp Thr Glu Thr Glu Gly Val Pro Ser Thr Ala
 35 40 45
 atc cga gag atc tct ctg ctt aag gag ctt aac cat cct aat att gtc 192
 Ile Arg Glu Ile Ser Leu Leu Lys Glu Leu Asn His Pro Asn Ile Val
 50 55 60
 aag ctg ctg gat gtc att cac aca gaa aat aaa ctc tac ctg gtt ttt 240
 Lys Leu Leu Asp Val Ile His Thr Glu Asn Lys Leu Tyr Leu Val Phe
 65 70 75 80
 gaa ttt ctg cac caa gat ctc aag aaa ttc atg gat gcc tct gct ctc 288

| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|------|
| Glu | Phe | Leu | His | Gln | Asp | Leu | Lys | Lys | Phe | Met | Asp | Ala | Ser | Ala | Leu | | |
| | | | | 85 | | | | | 90 | | | | | 95 | | | |
| act | ggc | att | cct | ctt | ccc | ctc | atc | aag | agc | tat | ctg | ttc | cag | ctg | ctc | | 336 |
| Thr | Gly | Ile | Pro | Leu | Pro | Leu | Ile | Lys | Ser | Tyr | Leu | Phe | Gln | Leu | Leu | | |
| | | | 100 | | | | | 105 | | | | 110 | | | | | |
| cag | ggc | cta | gct | ttc | tgc | cat | tct | cat | cgg | gtc | ctc | cac | cga | gac | ctt | | 384 |
| Gln | Gly | Leu | Ala | Phe | Cys | His | Ser | His | Arg | Val | Leu | His | Arg | Asp | Leu | | |
| | | 115 | | | | | 120 | | | | | 125 | | | | | |
| aaa | cct | cag | aat | ctg | ctt | att | aac | aca | gag | ggg | gcc | atc | aag | cta | gca | | 432 |
| Lys | Pro | Gln | Asn | Leu | Leu | Ile | Asn | Thr | Glu | Gly | Ala | Ile | Lys | Leu | Ala | | |
| | | 130 | | | | 135 | | | | | 140 | | | | | | |
| gac | ttt | gga | cta | gcc | aga | gct | ttt | gga | gtc | cct | ggt | cgt | act | tac | acc | | 480 |
| Asp | Phe | Gly | Leu | Ala | Arg | Ala | Phe | Gly | Val | Pro | Val | Arg | Thr | Tyr | Thr | | |
| | | | | 145 | | 150 | | | | | 155 | | | | 160 | | |
| cat | gag | gtg | gtg | acc | ctg | tgg | tac | cga | gct | cct | gaa | atc | ctc | ctg | ggc | | 528 |
| His | Glu | Val | Val | Thr | Leu | Trp | Tyr | Arg | Ala | Pro | Glu | Ile | Leu | Leu | Gly | | |
| | | | | 165 | | | | | 170 | | | | | 175 | | | |
| tcg | aaa | tat | tat | tcc | aca | gct | gtg | gac | atc | tgg | agc | ctg | ggc | tgc | atc | | 576 |
| Ser | Lys | Tyr | Tyr | Ser | Thr | Ala | Val | Asp | Ile | Trp | Ser | Leu | Gly | Cys | Ile | | |
| | | | 180 | | | | | 185 | | | | 190 | | | | | |
| ttt | gct | gag | atg | gtg | act | cgc | cgg | gcc | ctg | ttc | cct | gga | gat | tct | gag | | 624 |
| Phe | Ala | Glu | Met | Val | Thr | Arg | Arg | Ala | Leu | Phe | Pro | Gly | Asp | Ser | Glu | | |
| | | 195 | | | | 200 | | | | | 205 | | | | | | |
| att | gac | cag | ctc | ttc | cgg | atc | ttt | cgg | act | ctg | ggg | acc | cca | gat | gag | | 672 |
| Ile | Asp | Gln | Leu | Phe | Arg | Ile | Phe | Arg | Thr | Leu | Gly | Thr | Pro | Asp | Glu | | |
| | | 210 | | | 215 | | | | | | 220 | | | | | | |
| gtg | gtg | tgg | cca | gga | gtt | act | tct | atg | cct | gat | tac | aag | cca | agt | ttc | | 720 |
| Val | Val | Trp | Pro | Gly | Val | Thr | Ser | Met | Pro | Asp | Tyr | Lys | Pro | Ser | Phe | | |
| | | | | 225 | | 230 | | | | 235 | | | | | 240 | | |
| ccc | aag | tgg | gcc | cgg | caa | gat | ttt | agt | aaa | gtt | gta | cct | ccc | ctg | gat | | 768 |
| Pro | Lys | Trp | Ala | Arg | Gln | Asp | Phe | Ser | Lys | Val | Val | Pro | Pro | Leu | Asp | | |
| | | | 245 | | | | | 250 | | | | 255 | | | | | |
| gaa | gat | gga | cgg | agg | ttg | tta | tcg | caa | atg | ctg | cac | tac | gac | cct | aac | | 816 |
| Glu | Asp | Gly | Arg | Ser | Leu | Leu | Ser | Gln | Met | Leu | His | Tyr | Asp | Pro | Asn | | |
| | | | 260 | | | | | 265 | | | | 270 | | | | | |
| aag | cgg | att | tcg | gcc | aag | gca | gcc | ctg | gct | cac | cct | ttc | ttc | cag | gat | | 864 |
| Lys | Arg | Ile | Ser | Ala | Lys | Ala | Ala | Leu | Ala | His | Pro | Phe | Phe | Gln | Asp | | |
| | | 275 | | | | 280 | | | | | 285 | | | | | | |
| gtg | acc | aag | cca | gta | ccc | cat | ctt | cga | ctc | tgg | gat | cca | ccg | gtc | gcc | | 912 |
| Val | Thr | Lys | Pro | Val | Pro | His | Leu | Arg | Leu | Trp | Asp | Pro | Pro | Val | Ala | | |
| | | 290 | | | | 295 | | | | | 300 | | | | | | |
| acc | atg | gtg | agg | aag | ggc | gag | gag | ctg | ttc | acc | ggg | gtg | gtg | ccc | atc | | 960 |
| Thr | Met | Val | Ser | Lys | Gly | Glu | Glu | Leu | Phe | Thr | Gly | Val | Val | Pro | Ile | | |
| | | 305 | | | 310 | | | | | 315 | | | | | 320 | | |
| ctg | gtc | gag | ctg | gac | ggc | gac | gta | aac | ggc | cac | aag | ttc | agg | gtg | tcc | | 1008 |
| Leu | Val | Glu | Leu | Asp | Gly | Asp | Val | Asn | Gly | His | Lys | Phe | Ser | Val | Ser | | |
| | | | 325 | | | | | 330 | | | | 335 | | | | | |
| ggc | gag | ggc | gag | ggc | gat | gcc | acc | tac | ggc | aag | ctg | acc | ctg | aag | ttc | | 1056 |
| Gly | Glu | Gly | Glu | Gly | Asp | Ala | Thr | Tyr | Gly | Lys | Leu | Thr | Leu | Lys | Phe | | |
| | | | 340 | | | | | 345 | | | | 350 | | | | | |
| atc | tgc | acc | acc | ggc | aag | ctg | ccc | gtg | ccc | tgg | ccc | acc | ctc | gtg | acc | | 1104 |
| Ile | Cys | Thr | Thr | Gly | Lys | Leu | Pro | Val | Pro | Trp | Pro | Thr | Leu | Val | Thr | | |
| | | 355 | | | | 360 | | | | | 365 | | | | | | |
| acc | ctg | acc | tac | ggc | gtg | cag | tgc | ttc | agg | cgc | tac | ccc | gac | cac | atg | | 1152 |
| Thr | Leu | Thr | Tyr | Gly | Val | Gln | Cys | Phe | Ser | Arg | Tyr | Pro | Asp | His | Met | | |
| | | 370 | | | 375 | | | | | 380 | | | | | | | |
| aag | cag | cac | gac | ttc | ttc | aag | tcc | gcc | atg | ccc | gaa | ggc | tac | gtc | cag | | 1200 |
| Lys | Gln | His | Asp | Phe | Phe | Lys | Ser | Ala | Met | Pro | Glu | Gly | Tyr | Val | Gln | | |
| | | 385 | | | 390 | | | | 395 | | | | | | 400 | | |
| gag | cgc | acc | atc | ttc | ttc | aag | gac | gac | ggc | aac | tac | aag | acc | cgc | gcc | | 1248 |
| Glu | Arg | Thr | Ile | Phe | Phe | Lys | Asp | Asp | Gly | Asn | Tyr | Lys | Thr | Arg | Ala | | |
| | | | 405 | | | | | 410 | | | | 415 | | | | | |
| gag | gtg | aag | ttc | gag | ggc | gac | acc | ctg | gtg | aac | cgc | atc | gag | ctg | aag | | 1296 |

| | |
|---|------|
| Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys | |
| 420 425 430 | |
| ggc atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag | 1344 |
| Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu | |
| 435 440 445 | |
| tac aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag | 1392 |
| Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys | |
| 450 455 460 | |
| aac ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc | 1440 |
| Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly | |
| 465 470 475 480 | |
| agc gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac | 1488 |
| Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp | |
| 485 490 495 | |
| ggc ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc | 1536 |
| Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala | |
| 500 505 510 | |
| ctg agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag | 1584 |
| Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu | |
| 515 520 525 | |
| ttc gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag | 1632 |
| Phe Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys | |
| 530 535 540 | |
| taa | 1635 |

<210> 113

<211> 544

<212> PRT

<213> Artificial Sequence

<220>

<223> CDK2-EGFP fusion

| | |
|---|--|
| <400> 113 | |
| Met Glu Asn Phe Gln Lys Val Glu Lys Ile Gly Glu Gly Thr Tyr Gly | |
| 1 5 10 15 | |
| Val Val Tyr Lys Ala Arg Asn Lys Leu Thr Gly Glu Val Val Ala Leu | |
| 20 25 30 | |
| Lys Lys Ile Arg Leu Asp Thr Glu Thr Glu Gly Val Pro Ser Thr Ala | |
| 35 40 45 | |
| Ile Arg Glu Ile Ser Leu Leu Lys Glu Leu Asn His Pro Asn Ile Val | |
| 50 55 60 | |
| Lys Leu Leu Asp Val Ile His Thr Glu Asn Lys Leu Tyr Leu Val Phe | |
| 65 70 75 80 | |
| Glu Phe Leu His Gln Asp Leu Lys Lys Phe Met Asp Ala Ser Ala Leu | |
| 85 90 95 | |
| Thr Gly Ile Pro Leu Pro Leu Ile Lys Ser Tyr Leu Phe Gln Leu Leu | |
| 100 105 110 | |
| Gln Gly Leu Ala Phe Cys His Ser His Arg Val Leu His Arg Asp Leu | |
| 115 120 125 | |
| Lys Pro Gln Asn Leu Leu Ile Asn Thr Glu Gly Ala Ile Lys Leu Ala | |
| 130 135 140 | |
| Asp Phe Gly Leu Ala Arg Ala Phe Gly Val Pro Val Arg Thr Tyr Thr | |
| 145 150 155 160 | |
| His Glu Val Val Thr Leu Trp Tyr Arg Ala Pro Glu Ile Leu Leu Gly | |

<220>

<221> CDS

<222> (1)..(1632)

<400> 114

| | | | | | | | | | | | | | | | | |
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| atg | gtg | agc | aag | ggc | gag | gag | ctg | ttc | acc | ggg | gtg | gtg | ccc | atc | ctg | 48 |
| Met | Val | Ser | Lys | Gly | Glu | Glu | Leu | Phe | Thr | Gly | Val | Val | Pro | Ile | Leu | |
| 1 | | | | 5 | | | | 10 | | | | | 15 | | | |
| gtc | gag | ctg | gac | ggc | gac | gta | aac | ggc | cac | aag | ttc | agc | gtg | tcc | ggc | 96 |
| Val | Glu | Leu | Asp | Gly | Asp | Val | Asn | Gly | His | Lys | Phe | Ser | Val | Ser | Gly | |
| | | | 20 | | | | | 25 | | | | | 30 | | | |
| gag | ggc | gag | ggc | gat | gcc | acc | tac | ggc | aag | ctg | acc | ctg | aag | ttc | atc | 144 |
| Glu | Gly | Glu | Gly | Asp | Ala | Thr | Tyr | Gly | Lys | Leu | Thr | Leu | Lys | Phe | Ile | |
| | | | 35 | | | | 40 | | | | | 45 | | | | |
| tgc | acc | acc | ggc | aag | ctg | ccc | gtg | ccc | tgg | ccc | acc | ctc | gtg | acc | acc | 192 |
| Cys | Thr | Thr | Gly | Lys | Leu | Pro | Val | Pro | Trp | Pro | Thr | Leu | Val | Thr | Thr | |
| | 50 | | | | | 55 | | | | | 60 | | | | | |
| ctg | acc | tac | ggc | gtg | cag | tgc | ttc | agc | cgc | tac | ccc | gac | cac | atg | aag | 240 |
| Leu | Thr | Tyr | Gly | Val | Gln | Cys | Phe | Ser | Arg | Tyr | Pro | Asp | His | Met | Lys | |
| 65 | | | | 70 | | | | 75 | | | | | | 80 | | |
| cag | cac | gac | ttc | ttc | aag | tcc | gcc | atg | ccc | gaa | ggc | tac | gtc | cag | gag | 288 |
| Gln | His | Asp | Phe | Phe | Lys | Ser | Ala | Met | Pro | Glu | Gly | Tyr | Val | Gln | Glu | |
| | | | 85 | | | | | 90 | | | | | | 95 | | |
| cgc | acc | atc | ttc | ttc | aag | gac | gac | ggc | aac | tac | aag | acc | cgc | gcc | gag | 336 |
| Arg | Thr | Ile | Phe | Phe | Lys | Asp | Asp | Gly | Asn | Tyr | Lys | Thr | Arg | Ala | Glu | |
| | | | 100 | | | | | 105 | | | | | 110 | | | |
| gtg | aag | ttc | gag | ggc | gac | acc | ctg | gtg | aac | cgc | atc | gag | ctg | aag | ggc | 384 |
| Val | Lys | Phe | Glu | Gly | Asp | Thr | Leu | Val | Asn | Arg | Ile | Glu | Leu | Lys | Gly | |
| | | 115 | | | | | 120 | | | | | 125 | | | | |
| atc | gac | ttc | aag | gag | gac | ggc | aac | atc | ctg | ggg | cac | aag | ctg | gag | tac | 432 |
| Ile | Asp | Phe | Lys | Glu | Asp | Gly | Asn | Ile | Leu | Gly | His | Lys | Leu | Glu | Tyr | |
| | | | 130 | | | 135 | | | | | 140 | | | | | |
| aac | tac | aac | agc | cac | aac | gtc | tat | atc | atg | gcc | gac | aag | cag | aag | aac | 480 |
| Asn | Tyr | Asn | Ser | His | Asn | Val | Tyr | Ile | Met | Ala | Asp | Lys | Gln | Lys | Asn | |
| 145 | | | | | 150 | | | | | 155 | | | | 160 | | |
| ggc | atc | aag | gtg | aac | ttc | aag | atc | cgc | cac | aac | atc | gag | gac | ggc | agc | 528 |
| Gly | Ile | Lys | Val | Asn | Phe | Lys | Ile | Arg | His | Asn | Ile | Glu | Asp | Gly | Ser | |
| | | | 165 | | | | | 170 | | | | | 175 | | | |
| gtg | cag | ctc | gcc | gac | cac | tac | cag | cag | aac | acc | ccc | atc | ggc | gac | ggc | 576 |
| Val | Gln | Leu | Ala | Asp | His | Tyr | Gln | Gln | Asn | Thr | Pro | Ile | Gly | Asp | Gly | |
| | | | 180 | | | | 185 | | | | | | 190 | | | |
| ccc | gtg | ctg | ctg | ccc | gac | aac | cac | tac | ctg | agc | acc | cag | tcc | gcc | ctg | 624 |
| Pro | Val | Leu | Leu | Pro | Asp | Asn | His | Tyr | Leu | Ser | Thr | Gln | Ser | Ala | Leu | |
| | | | 195 | | | 200 | | | | | | 205 | | | | |
| agc | aaa | gac | ccc | aac | gag | aag | cgc | gat | cac | atg | gtc | ctg | ctg | gag | ttc | 672 |
| Ser | Lys | Asp | Pro | Asn | Glu | Lys | Arg | Asp | His | Met | Val | Leu | Leu | Glu | Phe | |
| | | 210 | | | | 215 | | | | | 220 | | | | | |
| gtg | acc | gcc | gcc | ggg | atc | act | ctc | ggc | atg | gac | gag | ctg | tac | aag | tcc | 720 |
| Val | Thr | Ala | Ala | Gly | Ile | Thr | Leu | Gly | Met | Asp | Glu | Leu | Tyr | Lys | Ser | |
| 225 | | | | | 230 | | | | | 235 | | | | 240 | | |
| gga | ctc | aga | tct | cga | gcc | atg | gag | aac | ttc | caa | aag | gtg | gaa | aag | atc | 768 |
| Gly | Leu | Arg | Ser | Arg | Ala | Met | Glu | Asn | Phe | Gln | Lys | Val | Glu | Lys | Ile | |
| | | | 245 | | | | | | 250 | | | | 255 | | | |
| gga | gag | ggc | acg | tac | gga | gtt | gtg | tac | aaa | gcc | aga | aac | aag | ttg | acg | 816 |
| Gly | Glu | Gly | Thr | Tyr | Gly | Val | Val | Tyr | Lys | Ala | Arg | Asn | Lys | Leu | Thr | |
| | | | 260 | | | | 265 | | | | | 270 | | | | |
| gga | gag | gtg | gtg | gcg | ctt | aag | aaa | atc | cgc | ctg | gac | act | gag | act | gag | 864 |
| Gly | Glu | Val | Val | Ala | Leu | Lys | Lys | Ile | Arg | Leu | Asp | Thr | Glu | Thr | Glu | |
| | | 275 | | | | | 280 | | | | | 285 | | | | |

| | |
|---|------|
| ggt gtg ccc agt act gcc atc cga gag atc tct ctg ctt aag gag ctt | 912 |
| Gly Val Pro Ser Thr Ala Ile Arg Glu Ile Ser Leu Leu Lys Glu Leu | |
| 290 295 300 | |
| aac cat cct aat att gtc aag ctg ctg gat gtc att cac aca gaa aat | 960 |
| Asn His Pro Asn Ile Val Lys Leu Leu Asp Val Ile His Thr Glu Asn | |
| 305 310 315 320 | |
| aaa ctc tac ctg gtt ttt gaa ttt ctg cac caa gat ctc aag aaa ttc | 1008 |
| Lys Leu Tyr Leu Val Phe Glu Phe Leu His Gln Asp Leu Lys Lys Phe | |
| 325 330 335 | |
| atg gat gcc tct gct ctc act ggc att cct ctt ccc ctc atc aag agc | 1056 |
| Met Asp Ala Ser Ala Leu Thr Gly Ile Pro Leu Pro Leu Ile Lys Ser | |
| 340 345 350 | |
| tat ctg ttc cag ctg ctc cag ggc cta gct ttc tgc cat tct cat cgg | 1104 |
| Tyr Leu Phe Gln Leu Leu Gln Gly Leu Ala Phe Cys His Ser His Arg | |
| 355 360 365 | |
| gtc ctc cac cga gac ctt aaa cct cag aat ctg ctt att aac aca gag | 1152 |
| Val Leu His Arg Asp Leu Lys Pro Gln Asn Leu Leu Ile Asn Thr Glu | |
| 370 375 380 | |
| ggg gcc atc aag cta gca gac ttt gga cta gcc aga gct ttt gga gtc | 1200 |
| Gly Ala Ile Lys Leu Ala Asp Phe Gly Leu Ala Arg Ala Phe Gly Val | |
| 385 390 395 400 | |
| cct gtt cgt act tac acc cat gag gtg gtg acc ctg tgg tac cga gct | 1248 |
| Pro Val Arg Thr Tyr Thr His Glu Val Val Thr Leu Trp Tyr Arg Ala | |
| 405 410 415 | |
| cct gaa atc ctc ctg ggc tcg aaa tat tat tcc aca gct gtg gac atc | 1296 |
| Pro Glu Ile Leu Leu Gly Ser Lys Tyr Tyr Ser Thr Ala Val Asp Ile | |
| 420 425 430 | |
| tgg agc ctg ggc tgc atc ttt gct gag atg gtg act cgc cgg gcc ctg | 1344 |
| Trp Ser Leu Gly Cys Ile Phe Ala Glu Met Val Thr Arg Arg Ala Leu | |
| 435 440 445 | |
| ttc cct gga gat tct gag att gac cag ctc ttc cgg atc ttt cgg act | 1392 |
| Phe Pro Gly Asp Ser Glu Ile Asp Gln Leu Phe Arg Ile Phe Arg Thr | |
| 450 455 460 | |
| ctg ggg acc cca gat gag gtg gtg tgg cca gga gtt act tct atg cct | 1440 |
| Leu Gly Thr Pro Asp Glu Val Val Trp Pro Gly Val Thr Ser Met Pro | |
| 465 470 475 480 | |
| gat tac aag cca agt ttc ccc aag tgg gcc cgg caa gat ttt agt aaa | 1488 |
| Asp Tyr Lys Pro Ser Phe Pro Lys Trp Ala Arg Gln Asp Phe Ser Lys | |
| 485 490 495 | |
| gtt gta cct ccc ctg gat gaa gat gga cgg agc ttg tta tcg caa atg | 1536 |
| Val Val Pro Pro Leu Asp Glu Asp Gly Arg Ser Leu Leu Ser Gln Met | |
| 500 505 510 | |
| ctg cac tac gac cct aac aag cgg att tcg gcc aag gca gcc ctg gct | 1584 |
| Leu His Tyr Asp Pro Asn Lys Arg Ile Ser Ala Lys Ala Ala Leu Ala | |
| 515 520 525 | |
| cac cct ttc ttc cag gat gtg acc aag cca gta ccc cat ctt cga ctc | 1632 |
| His Pro Phe Phe Gln Asp Val Thr Lys Pro Val Pro His Leu Arg Leu | |
| 530 535 540 | |
| tga | 1635 |

<210> 115

<211> 544

<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-CDK2 fusion

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<400> 115
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Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
20     25     30
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
35     40     45
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
50     55     60
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65     70     75     80
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
85     90     95
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
100    105    110
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
115    120    125
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
130    135    140
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145    150    155    160
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
165    170    175
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
180    185    190
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
195    200    205
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
210    215    220
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225    230    235    240
Gly Leu Arg Ser Arg Ala Met Glu Asn Phe Gln Lys Val Glu Lys Ile
245    250    255
Gly Glu Gly Thr Tyr Gly Val Val Tyr Lys Ala Arg Asn Lys Leu Thr
260    265    270
Gly Glu Val Val Ala Leu Lys Lys Ile Arg Leu Asp Thr Glu Thr Glu
275    280    285
Gly Val Pro Ser Thr Ala Ile Arg Glu Ile Ser Leu Leu Lys Glu Leu
290    295    300
Asn His Pro Asn Ile Val Lys Leu Leu Asp Val Ile His Thr Glu Asn
305    310    315    320
Lys Leu Tyr Leu Val Phe Glu Phe Leu His Gln Asp Leu Lys Lys Phe
325    330    335
Met Asp Ala Ser Ala Leu Thr Gly Ile Pro Leu Pro Leu Ile Lys Ser
340    345    350
Tyr Leu Phe Gln Leu Leu Gln Gly Leu Ala Phe Cys His Ser His Arg
355    360    365
Val Leu His Arg Asp Leu Lys Pro Gln Asn Leu Leu Ile Asn Thr Glu
370    375    380
Gly Ala Ile Lys Leu Ala Asp Phe Gly Leu Ala Arg Ala Phe Gly Val
385    390    395    400
Pro Val Arg Thr Tyr Thr His Glu Val Val Thr Leu Trp Tyr Arg Ala
405    410    415
Pro Glu Ile Leu Leu Gly Ser Lys Tyr Tyr Ser Thr Ala Val Asp Ile
420    425    430
Trp Ser Leu Gly Cys Ile Phe Ala Glu Met Val Thr Arg Arg Ala Leu
435    440    445
Phe Pro Gly Asp Ser Glu Ile Asp Gln Leu Phe Arg Ile Phe Arg Thr
450    455    460
Leu Gly Thr Pro Asp Glu Val Val Trp Pro Gly Val Thr Ser Met Pro
465    470    475    480

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| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Tyr | Lys | Pro | Ser | Phe | Pro | Lys | Trp | Ala | Arg | Gln | Asp | Phe | Ser | Lys |
| | | | | 485 | | | | | 490 | | | | | 495 | |
| Val | Val | Pro | Pro | Leu | Asp | Glu | Asp | Gly | Arg | Ser | Leu | Leu | Ser | Gln | Met |
| | | | 500 | | | | | 505 | | | | | 510 | | |
| Leu | His | Tyr | Asp | Pro | Asn | Lys | Arg | Ile | Ser | Ala | Lys | Ala | Ala | Leu | Ala |
| | | 515 | | | | | 520 | | | | | 525 | | | |
| His | Pro | Phe | Phe | Gln | Asp | Val | Thr | Lys | Pro | Val | Pro | His | Leu | Arg | Leu |
| | 530 | | | | | 535 | | | | | 540 | | | | |

<210> 116

<211> 2532

<212> DNA

<213> Artificial Sequence

<220>

<223> EGFP-PTP fusion

<220>

<221> CDS

<222> (1)..(2529)

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| <400> | 116 | | | | | | | | | | | | | | | |
| atg | gtg | agc | aag | ggc | gag | gag | ctg | ttc | acc | ggg | gtg | gtg | ccc | atc | ctg | 48 |
| Met | Val | Ser | Lys | Gly | Glu | Glu | Leu | Phe | Thr | Gly | Val | Val | Pro | Ile | Leu | |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | | |
| gtc | gag | ctg | gac | ggc | gac | gta | aac | ggc | cac | aag | ttc | agc | gtg | tcc | ggc | 96 |
| Val | Glu | Leu | Asp | Gly | Asp | Val | Asn | Gly | His | Lys | Phe | Ser | Val | Ser | Gly | |
| | | | 20 | | | | | 25 | | | | | 30 | | | |
| gag | ggc | gag | ggc | gat | gcc | acc | tac | ggc | aag | ctg | acc | ctg | aag | ttc | atc | 144 |
| Glu | Gly | Glu | Gly | Asp | Ala | Thr | Tyr | Gly | Lys | Leu | Thr | Leu | Lys | Phe | Ile | |
| | | | 35 | | | | 40 | | | | | 45 | | | | |
| tgc | acc | acc | ggc | aag | ctg | ccc | gtg | ccc | tgg | ccc | acc | ctc | gtg | acc | acc | 192 |
| Cys | Thr | Thr | Gly | Lys | Leu | Pro | Val | Pro | Trp | Pro | Thr | Leu | Val | Thr | Thr | |
| | 50 | | | | 55 | | | | | | 60 | | | | | |
| ctg | acc | tac | ggc | gtg | cag | tgc | ttc | agc | cgc | tac | ccc | gac | cac | atg | aag | 240 |
| Leu | Thr | Tyr | Gly | Val | Gln | Cys | Phe | Ser | Arg | Tyr | Pro | Asp | His | Met | Lys | |
| | 65 | | | | 70 | | | | 75 | | | | | 80 | | |
| cag | cac | gac | ttc | ttc | aag | tcc | gcc | atg | ccc | gaa | ggc | tac | gtc | cag | gag | 288 |
| Gln | His | Asp | Phe | Phe | Lys | Ser | Ala | Met | Pro | Glu | Gly | Tyr | Val | Gln | Glu | |
| | | | 85 | | | | | | 90 | | | | | 95 | | |
| cgc | acc | atc | ttc | ttc | aag | gac | gac | ggc | aac | tac | aag | acc | cgc | gcc | gag | 336 |
| Arg | Thr | Ile | Phe | Phe | Lys | Asp | Asp | Gly | Asn | Tyr | Lys | Thr | Arg | Ala | Glu | |
| | | | 100 | | | | | 105 | | | | | 110 | | | |
| gtg | aag | ttc | gag | ggc | gac | acc | ctg | gtg | aac | cgc | atc | gag | ctg | aag | ggc | 384 |
| Val | Lys | Phe | Glu | Gly | Asp | Thr | Leu | Val | Asn | Arg | Ile | Glu | Leu | Lys | Gly | |
| | | 115 | | | | | 120 | | | | | 125 | | | | |
| atc | gac | ttc | aag | gag | gac | ggc | aac | atc | ctg | ggg | cac | aag | ctg | gag | tac | 432 |
| Ile | Asp | Phe | Lys | Glu | Asp | Gly | Asn | Ile | Leu | Gly | His | Lys | Leu | Glu | Tyr | |
| | 130 | | | | | 135 | | | | | 140 | | | | | |
| aac | tac | aac | agc | cac | aac | gtc | tat | atc | atg | gcc | gac | aag | cag | aag | aac | 480 |
| Asn | Tyr | Asn | Ser | His | Asn | Val | Tyr | Ile | Met | Ala | Asp | Lys | Gln | Lys | Asn | |
| | 145 | | | | 150 | | | | | 155 | | | | | 160 | |

| | |
|---|------|
| ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc | 528 |
| Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser | |
| 165 170 175 | |
| gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc | 576 |
| Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly | |
| 180 185 190 | |
| ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg | 624 |
| Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu | |
| 195 200 205 | |
| agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc | 672 |
| Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe | |
| 210 215 220 | |
| gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc | 720 |
| Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser | |
| 225 230 235 240 | |
| gga ctc aga tct cga gag atg ctg tcc cgt ggg tgg ttt cac cga gac | 768 |
| Gly Leu Arg Ser Arg Glu Met Leu Ser Arg Gly Trp Phe His Arg Asp | |
| 245 250 255 | |
| ctc agt ggg ctg gat gca gag acc ctg ctc aag ggc cga ggt gtc cac | 816 |
| Leu Ser Gly Leu Asp Ala Glu Thr Leu Lys Gly Arg Gly Val His | |
| 260 265 270 | |
| ggt agc ttc ctg gct cgg ccc agt cgc aag aac cag ggt gac ttc tcg | 864 |
| Gly Ser Phe Leu Ala Arg Pro Ser Arg Lys Asn Gln Gly Asp Phe Ser | |
| 275 280 285 | |
| ctc tcc gtc agg gtg ggg gat cag gtg acc cat att cgg atc cag aac | 912 |
| Leu Ser Val Arg Val Gly Asp Gln Val Thr His Ile Arg Ile Gln Asn | |
| 290 295 300 | |
| tca ggg gat ttc tat gac ctg tat gga ggg gag aag ttt gcg act ctg | 960 |
| Ser Gly Asp Phe Tyr Asp Leu Tyr Gly Gly Glu Lys Phe Ala Thr Leu | |
| 305 310 315 320 | |
| aca gag ctg gtg gag tac tac act cag cag cag ggt gtc ctg cag gac | 1008 |
| Thr Glu Leu Val Glu Tyr Tyr Thr Gln Gln Gly Val Leu Gln Asp | |
| 325 330 335 | |
| cgc gac ggc acc atc atc cac ctc aag tac ccg ctg aac tgc tcc gat | 1056 |
| Arg Asp Gly Thr Ile Ile His Leu Lys Tyr Pro Leu Asn Cys Ser Asp | |
| 340 345 350 | |
| ccc act agt gag agg tgg tac cat ggc cac atg tct ggc ggg cag gca | 1104 |
| Pro Thr Ser Glu Arg Trp Tyr His Gly His Met Ser Gly Gly Gln Ala | |
| 355 360 365 | |
| gag acg ctg ctg cag gcc aag ggc gag ccc tgg acg ttt ctt gtg cgt | 1152 |
| Glu Thr Leu Leu Gln Ala Lys Gly Glu Pro Trp Thr Phe Leu Val Arg | |
| 370 375 380 | |
| gag agc ctc agc cag cct gga gac ttc gtg ctt tct gtg ctc agt gac | 1200 |
| Glu Ser Leu Ser Gln Pro Gly Asp Phe Val Leu Ser Val Leu Ser Asp | |
| 385 390 395 400 | |
| cag ccc aag gct ggc cca gcc tcc ccg ctc agg gtc acc cac atc aag | 1248 |
| Gln Pro Lys Ala Gly Pro Gly Ser Pro Leu Arg Val Thr His Ile Lys | |
| 405 410 415 | |
| gtc atg tgc gag ggt gga cgc tac aca gtg ggt ggt ttg gag acc ttc | 1296 |
| Val Met Cys Glu Gly Gly Arg Tyr Thr Val Gly Gly Leu Glu Thr Phe | |
| 420 425 430 | |
| gac agc ctc acg gac ctg gta gag cat ttc aag aag acg ggg att gag | 1344 |
| Asp Ser Leu Thr Asp Leu Val Glu His Phe Lys Lys Thr Gly Ile Glu | |
| 435 440 445 | |
| gag gcc tca ggc gcc ttt gtc tac ctg cgg cag ccg tac tat gcc acg | 1392 |
| Glu Ala Ser Gly Ala Phe Val Tyr Leu Arg Gln Pro Tyr Tyr Ala Thr | |
| 450 455 460 | |
| agg gtg aat gcg gct gac att gag aac cga gtg ttg gaa ctg aac aag | 1440 |
| Arg Val Asn Ala Ala Asp Ile Glu Asn Arg Val Leu Glu Leu Asn Lys | |
| 465 470 475 480 | |
| aag cag gag tcc gag gat aca gcc aag gct ggc ttc tgg gag gag ttt | 1488 |
| Lys Gln Glu Ser Glu Asp Thr Ala Lys Ala Gly Phe Trp Glu Glu Phe | |
| 485 490 495 | |

| | | | | | | | |
|-------------|-------------|---------|-------------|---------|---------|---------|------|
| gag agt ttg | cag aag cag | gag gtg | aag aac | ttg cac | cag cgt | ctg gaa | 1536 |
| Glu Ser Leu | Gln Lys Gln | Glu Val | Lys Asn Leu | His Gln | Arg Leu | Glu | |
| | 500 | | 505 | | 510 | | |
| ggg cag cgg | cca gag aac | aag ggc | aag aac | cgc tac | aag aac | att ctc | 1584 |
| Gly Gln Arg | Pro Glu Asn | Lys Gly | Lys Asn Arg | Tyr Lys | Asn Ile | Leu | |
| | 515 | | 520 | | 525 | | |
| ccc ttt gac | cac agc cga | gtg atc | ctg cag | gga cgg | gac agt | aac atc | 1632 |
| Pro Phe Asp | His Ser Arg | Val Ile | Leu Gln | Gly Arg | Asp Ser | Asn Ile | |
| | 530 | | 535 | | 540 | | |
| ccc ggg tcc | gac tac atc | aat gcc | aac tac | atc aag | aac cag | ctg cta | 1680 |
| Pro Gly Ser | Asp Tyr Ile | Asn Ala | Asn Tyr | Ile Lys | Asn Gln | Leu Leu | |
| | 545 | | 550 | | 555 | | |
| ggc cct gat | gag aac gct | aag acc | tac atc | gcc agc | cag ggc | tgt ctc | 1728 |
| Gly Pro Asp | Glu Asn Ala | Lys Thr | Tyr Ile | Ala Ser | Gln Gly | Cys Leu | |
| | 565 | | 570 | | 575 | | |
| gag gcc acg | gtc aat gac | ttc tgg | cag atg | gcg tgg | cag gag | aac agc | 1776 |
| Glu Ala Thr | Val Asn Asp | Phe Trp | Gln Met | Ala Trp | Gln Glu | Asn Ser | |
| | 580 | | 585 | | 590 | | |
| cgt gtc atc | gtc atg acc | acc cga | gag gtg | gag aaa | ggc cgg | aac aaa | 1824 |
| Arg Val Ile | Val Met Thr | Thr Thr | Arg Glu | Val Glu | Lys Gly | Arg Asn | |
| | 595 | | 600 | | 605 | | |
| tgc gtc cca | tac tgg ccc | gag gtg | ggc atg | cag cgt | gct tat | ggg ccc | 1872 |
| Cys Val Pro | Tyr Trp Pro | Glu Val | Gly Met | Gln Arg | Ala Tyr | Gly Pro | |
| | 610 | | 615 | | 620 | | |
| tac tct gtg | acc aac tgc | ggg gag | cat gac | aca acc | gaa tac | aaa ctc | 1920 |
| Tyr Ser Val | Thr Asn Cys | Gly Glu | His Asp | Thr Thr | Glu Tyr | Lys Leu | |
| | 625 | | 630 | | 635 | | |
| cgt acc tta | cag gtc tcc | ccg ctg | gac aat | gga gac | ctg att | cgg gag | 1968 |
| Arg Thr Leu | Gln Val Ser | Pro Leu | Asp Asn | Gly Asp | Leu Ile | Arg Glu | |
| | 645 | | 650 | | 655 | | |
| atc tgg cat | tac cag tac | ctg agc | tgg ccc | gac cat | ggg gtc | ccc agt | 2016 |
| Ile Trp His | Tyr Gln Tyr | Leu Ser | Trp Pro | Asp His | Gly Val | Pro Ser | |
| | 660 | | 665 | | 670 | | |
| gag cct ggg | ggt gtc ctc | agc ttc | ctg gac | cag atc | aac cag | cgg cag | 2064 |
| Glu Pro Gly | Gly Val Leu | Ser Phe | Leu Asp | Gln Ile | Asn Gln | Arg Gln | |
| | 675 | | 680 | | 685 | | |
| gaa agt ctg | cct cac gca | ggg ccc | atc atc | gtg cac | tgc agc | gcc ggc | 2112 |
| Glu Ser Leu | Pro His Ala | Gly Pro | Ile Ile | Val His | Cys Ser | Ala Gly | |
| | 690 | | 695 | | 700 | | |
| atc ggc cgc | aca ggc acc | atc att | gtc atc | gac atg | ctc atg | gag aac | 2160 |
| Ile Gly Arg | Thr Gly Thr | Ile Ile | Val Ile | Asp Met | Leu Met | Glu Asn | |
| | 705 | | 710 | | 715 | | |
| atc tcc acc | aag ggc ctg | gac tgt | gac att | gac atc | cag aag | acc atc | 2208 |
| Ile Ser Thr | Lys Gly Leu | Asp Cys | Asp Ile | Asp Ile | Gln Lys | Thr Ile | |
| | 725 | | 730 | | 735 | | |
| cag atg gtg | cgg gcg cag | cgc tcg | ggc atg | gtg cag | acg gag | gcg cag | 2256 |
| Gln Met Val | Arg Ala Gln | Arg Ser | Gly Met | Val Gln | Thr Glu | Ala Gln | |
| | 740 | | 745 | | 750 | | |
| tac aag ttc | atc tac gtg | gcc atc | gcc cag | ttc att | gaa acc | act aag | 2304 |
| Tyr Lys Phe | Ile Tyr Val | Ala Ile | Ala Gln | Phe Ile | Glu Thr | Thr Lys | |
| | 755 | | 760 | | 765 | | |
| aag aag ctg | gag gtc ctg | cag tcg | cag aag | ggc cag | gag tcg | gag tac | 2352 |
| Lys Lys Leu | Glu Val Leu | Gln Ser | Gln Lys | Gly Gln | Glu Ser | Glu Tyr | |
| | 770 | | 775 | | 780 | | |
| ggg aac atc | acc tat ccc | cca gcc | atg aag | aat gcc | cat gcc | aag gcc | 2400 |
| Gly Asn Ile | Thr Tyr Pro | Ala Met | Lys Asn | Ala His | Ala Lys | Ala | |
| | 785 | | 790 | | 795 | | |
| tcc cgc acc | tcg tcc aaa | cac aag | gag gat | gtg tat | gag aac | ctg cac | 2448 |
| Ser Arg Thr | Ser Ser Lys | His Lys | Glu Asp | Val Tyr | Glu Asn | Leu His | |
| | 805 | | 810 | | 815 | | |
| act aag aac | aag agg gag | gag aaa | gtg aag | aag cag | cgg tca | gca gac | 2496 |
| Thr Lys Asn | Lys Arg Glu | Glu Lys | Val Lys | Lys Gln | Arg Ser | Ala Asp | |
| | 820 | | 825 | | 830 | | |

| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|
| Pro | Thr | Ser | Glu | Arg | Trp | Tyr | His | Gly | His | Met | Ser | Gly | Gly | Gln | Ala | | |
| | | 355 | | | | | 360 | | | | | 365 | | | | | |
| Glu | Thr | Leu | Leu | Gln | Ala | Lys | Gly | Glu | Pro | Trp | Thr | Phe | Leu | Val | Arg | | |
| | 370 | | | | | 375 | | | | | 380 | | | | | | |
| Glu | Ser | Leu | Ser | Gln | Pro | Gly | Asp | Phe | Val | Leu | Ser | Val | Leu | Ser | Asp | | |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | | |
| Gln | Pro | Lys | Ala | Gly | Pro | Gly | Ser | Pro | Leu | Arg | Val | Thr | His | Ile | Lys | | |
| | | | 405 | | | | | | 410 | | | | | 415 | | | |
| Val | Met | Cys | Glu | Gly | Gly | Arg | Tyr | Thr | Val | Gly | Gly | Leu | Glu | Thr | Phe | | |
| | | | 420 | | | | | 425 | | | | | 430 | | | | |
| Asp | Ser | Leu | Thr | Asp | Leu | Val | Glu | His | Phe | Lys | Lys | Thr | Gly | Ile | Glu | | |
| | 435 | | | | | | 440 | | | | | 445 | | | | | |
| Glu | Ala | Ser | Gly | Ala | Phe | Val | Tyr | Leu | Arg | Gln | Pro | Tyr | Tyr | Ala | Thr | | |
| | 450 | | | | | 455 | | | | | 460 | | | | | | |
| Arg | Val | Asn | Ala | Ala | Asp | Ile | Glu | Asn | Arg | Val | Leu | Glu | Leu | Asn | Lys | | |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 | | |
| Lys | Gln | Glu | Ser | Glu | Asp | Thr | Ala | Lys | Ala | Gly | Phe | Trp | Glu | Glu | Phe | | |
| | | | | 485 | | | | | 490 | | | | | | 495 | | |
| Glu | Ser | Leu | Gln | Lys | Gln | Glu | Val | Lys | Asn | Leu | His | Gln | Arg | Leu | Glu | | |
| | | 500 | | | | | | 505 | | | | | 510 | | | | |
| Gly | Gln | Arg | Pro | Glu | Asn | Lys | Gly | Lys | Asn | Arg | Tyr | Lys | Asn | Ile | Leu | | |
| | 515 | | | | | | 520 | | | | | 525 | | | | | |
| Pro | Phe | Asp | His | Ser | Arg | Val | Ile | Leu | Gln | Gly | Arg | Asp | Ser | Asn | Ile | | |
| | 530 | | | | | 535 | | | | | | 540 | | | | | |
| Pro | Gly | Ser | Asp | Tyr | Ile | Asn | Ala | Asn | Tyr | Ile | Lys | Asn | Gln | Leu | Leu | | |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 | | |
| Gly | Pro | Asp | Glu | Asn | Ala | Lys | Thr | Tyr | Ile | Ala | Ser | Gln | Gly | Cys | Leu | | |
| | | | 565 | | | | | | 570 | | | | | 575 | | | |
| Glu | Ala | Thr | Val | Asn | Asp | Phe | Trp | Gln | Met | Ala | Trp | Gln | Glu | Asn | Ser | | |
| | | 580 | | | | | | 585 | | | | | 590 | | | | |
| Arg | Val | Ile | Val | Met | Thr | Thr | Arg | Glu | Val | Glu | Lys | Gly | Arg | Asn | Lys | | |
| | 595 | | | | | | 600 | | | | | 605 | | | | | |
| Cys | Val | Pro | Tyr | Trp | Pro | Glu | Val | Gly | Met | Gln | Arg | Ala | Tyr | Gly | Pro | | |
| | 610 | | | | | 615 | | | | | 620 | | | | | | |
| Tyr | Ser | Val | Thr | Asn | Cys | Gly | Glu | His | Asp | Thr | Thr | Glu | Tyr | Lys | Leu | | |
| 625 | | | | | 630 | | | | | 635 | | | | | 640 | | |
| Arg | Thr | Leu | Gln | Val | Ser | Pro | Leu | Asp | Asn | Gly | Asp | Leu | Ile | Arg | Glu | | |
| | | | 645 | | | | | | 650 | | | | | 655 | | | |
| Ile | Trp | His | Tyr | Gln | Tyr | Leu | Ser | Trp | Pro | Asp | His | Gly | Val | Pro | Ser | | |
| | | | 660 | | | | | 665 | | | | | 670 | | | | |
| Glu | Pro | Gly | Gly | Val | Leu | Ser | Phe | Leu | Asp | Gln | Ile | Asn | Gln | Arg | Gln | | |
| | 675 | | | | | | 680 | | | | | 685 | | | | | |
| Glu | Ser | Leu | Pro | His | Ala | Gly | Pro | Ile | Ile | Val | His | Cys | Ser | Ala | Gly | | |
| | 690 | | | | | 695 | | | | | 700 | | | | | | |
| Ile | Gly | Arg | Thr | Gly | Thr | Ile | Ile | Val | Ile | Asp | Met | Leu | Met | Glu | Asn | | |
| 705 | | | | | 710 | | | | | 715 | | | | | 720 | | |
| Ile | Ser | Thr | Lys | Gly | Leu | Asp | Cys | Asp | Ile | Asp | Ile | Gln | Lys | Thr | Ile | | |
| | | | 725 | | | | | | 730 | | | | | 735 | | | |
| Gln | Met | Val | Arg | Ala | Gln | Arg | Ser | Gly | Met | Val | Gln | Thr | Glu | Ala | Gln | | |
| | | 740 | | | | | | 745 | | | | | 750 | | | | |
| Tyr | Lys | Phe | Ile | Tyr | Val | Ala | Ile | Ala | Gln | Phe | Ile | Glu | Thr | Thr | Lys | | |
| | | 755 | | | | 760 | | | | | 765 | | | | | | |
| Lys | Lys | Leu | Glu | Val | Leu | Gln | Ser | Gln | Lys | Gly | Gln | Glu | Ser | Glu | Tyr | | |
| | 770 | | | | | 775 | | | | | 780 | | | | | | |
| Gly | Asn | Ile | Thr | Tyr | Pro | Pro | Ala | Met | Lys | Asn | Ala | His | Ala | Lys | Ala | | |
| 785 | | | | | 790 | | | | | 795 | | | | | 800 | | |
| Ser | Arg | Thr | Ser | Ser | Lys | His | Lys | Glu | Asp | Val | Tyr | Glu | Asn | Leu | His | | |
| | | | | 805 | | | | | 810 | | | | | 815 | | | |
| Thr | Lys | Asn | Lys | Arg | Glu | Glu | Lys | Val | Lys | Lys | Gln | Arg | Ser | Ala | Asp | | |
| | | 820 | | | | | | 825 | | | | | 830 | | | | |
| Lys | Glu | Lys | Ser | Lys | Gly | Ser | Leu | Lys | Arg | Lys | | | | | | | |
| | | 835 | | | | | 840 | | | | | | | | | | |

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<220>

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 Met Leu Ser Arg Gly Trp Phe His Arg Asp Leu Ser Gly Leu Asp Ala
 1 5 10 15
 gag acc ctg ctc aag ggc cga ggt gtc cac ggt agc ttc ctg gct cgg 96
 Glu Thr Leu Leu Lys Gly Arg Gly Val His Gly Ser Phe Leu Ala Arg
 20 25 30
 ccc agt cgc aag aac cag ggt gac ttc tcg ctc tcc gtc agg gtg ggg 144
 Pro Ser Arg Lys Asn Gln Gly Asp Phe Ser Leu Ser Val Arg Val Gly
 35 40 45
 gat cag gtg acc cat att cgg atc cag aac tca ggg gat ttc tat gac 192
 Asp Gln Val Thr His Ile Arg Ile Gln Asn Ser Gly Asp Phe Tyr Asp
 50 55 60
 ctg tat gga ggg gag aag ttt gcg act ctg aca gag ctg gtg gag tac 240
 Leu Tyr Gly Gly Glu Lys Phe Ala Thr Leu Thr Glu Leu Val Glu Tyr
 65 70 75 80
 tac act cag cag cag ggt gtc ctg cag gac cgc gac ggc acc atc atc 288
 Tyr Thr Gln Gln Gln Gly Val Leu Gln Asp Arg Asp Gly Thr Ile Ile
 85 90 95
 cac ctc aag tac ccg ctg aac tgc tcc gat ccc act agt gag agg tgg 336
 His Leu Lys Tyr Pro Leu Asn Cys Ser Asp Pro Thr Ser Glu Arg Trp
 100 105 110
 tac cat ggc cac atg tct ggc ggg cag gca gag acg ctg ctg cag gcc 384
 Tyr His Gly His Met Ser Gly Gly Gln Ala Glu Thr Leu Leu Gln Ala
 115 120 125
 aag ggc gag ccc tgg acg ttt ctt gtg cgt gag agc ctc agc cag cct 432
 Lys Gly Glu Pro Trp Thr Phe Leu Val Arg Glu Ser Leu Ser Gln Pro
 130 135 140
 gga gac ttc gtg ctt tct gtg ctc agt gac cag ccc aag gct ggc cca 480
 Gly Asp Phe Val Leu Ser Val Leu Ser Asp Gln Pro Lys Ala Gly Pro
 145 150 155 160
 ggc tcc ccg ctc agg gtc acc cac atc aag gtc atg tgc gag ggt gga 528
 Gly Ser Pro Leu Arg Val Thr His Ile Lys Val Met Cys Glu Gly Gly
 165 170 175
 cgc tac aca gtg ggt ggt ttg gag acc ttc gac agc ctc acg gac ctg 576
 Arg Tyr Thr Val Gly Gly Leu Glu Thr Phe Asp Ser Leu Thr Asp Leu
 180 185 190
 gta gag cat ttc aag aag acg ggg att gag gag gcc tca gcc ttt 624
 Val Glu His Phe Lys Lys Thr Gly Ile Glu Glu Ala Ser Gly Ala Phe

| | | | |
|---|-----|-----|------|
| 530 | 535 | 540 | 1680 |
| cca gcc atg aag aat gcc cat gcc aag gcc tcc cgc acc tcg tcc aaa | | | |
| Pro Ala Met Lys Asn Ala His Ala Lys Ala Ser Arg Thr Ser Ser Lys | | | |
| 545 | 550 | 555 | 560 |
| cac aag gag gat gtg tat gag aac ctg cac act aag aac aag agg gag | | | |
| His Lys Glu Asp Val Tyr Glu Asn Leu His Thr Lys Asn Lys Arg Glu | | | 1728 |
| 565 | 570 | 575 | |
| gag aaa gtg aag aag cag cgg tca gca gac aag gag aag agc aag ggt | | | |
| Glu Lys Val Lys Lys Gln Arg Ser Ala Asp Lys Glu Lys Ser Lys Gly | | | 1776 |
| 580 | 585 | 590 | |
| tcc ctc aag agg aag cga att ctg cag tcg acg gta ccg cgg gcc cgg | | | |
| Ser Leu Lys Arg Lys Arg Ile Leu Gln Ser Thr Val Pro Arg Ala Arg | | | 1824 |
| 595 | 600 | 605 | |
| gat cca ccg gtc gcc acc atg gtg agc aag ggc gag gag ctg ttc acc | | | |
| Asp Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe Thr | | | 1872 |
| 610 | 615 | 620 | |
| ggg gtg gtg ccc atc ctg gtc gag ctg gac ggc gac gta aac ggc cac | | | |
| Gly Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly His | | | 1920 |
| 625 | 630 | 635 | 640 |
| aag ttc agc gtg tcc ggc gag ggc gag ggc gat gcc acc tac ggc aag | | | |
| Lys Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys | | | 1968 |
| 645 | 650 | 655 | |
| ctg acc ctg aag ttc atc tgc acc acc ggc aag ctg ccc gtg ccc tgg | | | |
| Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp | | | 2016 |
| 660 | 665 | 670 | |
| ccc acc ctc gtg acc acc ctg acc tac ggc gtg cag tgc ttc agc cgc | | | |
| Pro Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg | | | 2064 |
| 675 | 680 | 685 | |
| tac ccc gac cac atg aag cag cac gac ttc ttc aag tcc gcc atg ccc | | | |
| Tyr Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro | | | 2112 |
| 690 | 695 | 700 | |
| gaa ggc tac gtc cag gag cgc acc atc ttc ttc aag gac gac ggc aac | | | |
| Glu Gly Tyr Val Gln Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn | | | 2160 |
| 705 | 710 | 715 | 720 |
| tac aag acc cgc gcc gag gtg aag ttc gag ggc gac acc ctg gtg aac | | | |
| Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn | | | 2208 |
| 725 | 730 | 735 | |
| cgc atc gag ctg aag ggc atc gac ttc aag gag gac ggc aac atc ctg | | | |
| Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu | | | 2256 |
| 740 | 745 | 750 | |
| ggg cac aag ctg gag tac aac tac aac agc cac aac gtc tat atc atg | | | |
| Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met | | | 2304 |
| 755 | 760 | 765 | |
| gcc gac aag cag aag aac ggc atc aag gtg aac ttc aag atc cgc cac | | | |
| Ala Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His | | | 2352 |
| 770 | 775 | 780 | |
| aac atc gag gac ggc agc gtg cag ctc gcc gac cac tac cag cag aac | | | |
| Asn Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn | | | 2400 |
| 785 | 790 | 795 | 800 |
| acc ccc atc ggc gac ggc ccc gtg ctg ctg ccc gac aac cac tac ctg | | | |
| Thr Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu | | | 2448 |
| 805 | 810 | 815 | |
| agc acc cag tcc gcc ctg agc aaa gac ccc aac gag aag cgc gat cac | | | |
| Ser Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His | | | 2496 |
| 820 | 825 | 830 | |
| atg gtc ctg ctg gag ttc gtg acc gcc gcc ggg atc act ctc ggc atg | | | |
| Met Val Leu Leu Glu Phe Val Thr Ala Ala Gly Ile Thr Leu Gly Met | | | 2544 |
| 835 | 840 | 845 | |
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| Asp Glu Leu Tyr Lys | | | 2562 |
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<220>

<223> PTP-EGFP fusion

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Pro Ser Arg Lys Asn Gln Gly Asp Phe Ser Leu Ser Val Arg Val Gly
      35      40      45
Asp Gln Val Thr His Ile Arg Ile Gln Asn Ser Gly Asp Phe Tyr Asp
      50      55      60
Leu Tyr Gly Gly Glu Lys Phe Ala Thr Leu Thr Glu Leu Val Glu Tyr
      65      70      75      80
Tyr Thr Gln Gln Gln Gly Val Leu Gln Asp Arg Asp Gly Thr Ile Ile
      85      90      95
His Leu Lys Tyr Pro Leu Asn Cys Ser Asp Pro Thr Ser Glu Arg Trp
      100      105      110
Tyr His Gly His Met Ser Gly Gly Gln Ala Glu Thr Leu Leu Gln Ala
      115      120      125
Lys Gly Glu Pro Trp Thr Phe Leu Val Arg Glu Ser Leu Ser Gln Pro
      130      135      140
Gly Asp Phe Val Leu Ser Val Leu Ser Asp Gln Pro Lys Ala Gly Pro
      145      150      155      160
Gly Ser Pro Leu Arg Val Thr His Ile Lys Val Met Cys Glu Gly Gly
      165      170      175
Arg Tyr Thr Val Gly Gly Leu Glu Thr Phe Asp Ser Leu Thr Asp Leu
      180      185      190
Val Glu His Phe Lys Lys Thr Gly Ile Glu Glu Ala Ser Gly Ala Phe
      195      200      205
Val Tyr Leu Arg Gln Pro Tyr Tyr Ala Thr Arg Val Asn Ala Ala Asp
      210      215      220
Ile Glu Asn Arg Val Leu Glu Leu Asn Lys Lys Gln Glu Ser Glu Asp
      225      230      235      240
Thr Ala Lys Ala Gly Phe Trp Glu Glu Phe Glu Ser Leu Gln Lys Gln
      245      250      255
Glu Val Lys Asn Leu His Gln Arg Leu Glu Gly Gln Arg Pro Glu Asn
      260      265      270
Lys Gly Lys Asn Arg Tyr Lys Asn Ile Leu Pro Phe Asp His Ser Arg
      275      280      285
Val Ile Leu Gln Gly Arg Asp Ser Asn Ile Pro Gly Ser Asp Tyr Ile
      290      295      300
Asn Ala Asn Tyr Ile Lys Asn Gln Leu Leu Gly Pro Asp Glu Asn Ala
      305      310      315      320
Lys Thr Tyr Ile Ala Ser Gln Gly Cys Leu Glu Ala Thr Val Asn Asp
      325      330      335
Phe Trp Gln Met Ala Trp Gln Glu Asn Ser Arg Val Ile Val Met Thr
      340      345      350
Thr Arg Glu Val Glu Lys Gly Arg Asn Lys Cys Val Pro Tyr Trp Pro
      355      360      365
Glu Val Gly Met Gln Arg Ala Tyr Gly Pro Tyr Ser Val Thr Asn Cys
      370      375      380
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Gly Glu His Asp Thr Thr Glu Tyr Lys Leu Arg Thr Leu Gln Val Ser
 385 390 395 400
 Pro Leu Asp Asn Gly Asp Leu Ile Arg Glu Ile Trp His Tyr Gln Tyr
 405 410 415
 Leu Ser Trp Pro Asp His Gly Val Pro Ser Glu Pro Gly Gly Val Leu
 420 425 430
 Ser Phe Leu Asp Gln Ile Asn Gln Arg Gln Glu Ser Leu Pro His Ala
 435 440 445
 Gly Pro Ile Ile Val His Cys Ser Ala Gly Ile Gly Arg Thr Gly Thr
 450 455 460
 Ile Ile Val Ile Asp Met Leu Met Glu Asn Ile Ser Thr Lys Gly Leu
 465 470 475 480
 Asp Cys Asp Ile Asp Ile Gln Lys Thr Ile Gln Met Val Arg Ala Gln
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 Arg Ser Gly Met Val Gln Thr Glu Ala Gln Tyr Lys Phe Ile Tyr Val
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 Ala Ile Ala Gln Phe Ile Glu Thr Lys Lys Lys Leu Glu Val Leu
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 Pro Ala Met Lys Asn Ala His Ala Lys Ala Ser Arg Thr Ser Ser Lys
 545 550 555 560
 His Lys Glu Asp Val Tyr Glu Asn Leu His Thr Lys Asn Lys Arg Glu
 565 570 575
 Glu Lys Val Lys Lys Gln Arg Ser Ala Asp Lys Glu Lys Ser Lys Gly
 580 585 590
 Ser Leu Lys Arg Lys Arg Ile Leu Gln Ser Thr Val Pro Arg Ala Arg
 595 600 605
 Asp Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe Thr
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 Gly Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly His
 625 630 635 640
 Lys Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys
 645 650 655
 Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp
 660 665 670
 Pro Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg
 675 680 685
 Tyr Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro
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 Glu Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn
 705 710 715 720
 Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn
 725 730 735
 Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu
 740 745 750
 Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met
 755 760 765
 Ala Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His
 770 775 780
 Asn Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn
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 Thr Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu
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 Ser Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His
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 Asp Glu Leu Tyr Lys
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Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
20          25          30
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc      144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
35          40          45
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc      192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
50          55          60
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag      240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65          70          75          80
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag      288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
85          90          95
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag      336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
100          105          110
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc      384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
115          120          125
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac      432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
130          135          140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac      480
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145          150          155          160
ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc      528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
165          170          175
gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc      576
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
180          185          190
ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg      624
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
195          200          205
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| | | | | | | | | | | | | | | | | | |
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| Ser | Lys | Asp | Pro | Asn | Glu | Lys | Arg | Asp | His | Met | Val | Leu | Leu | Glu | Phe | | |
| 210 | | | | | | 215 | | | | | 220 | | | | | | |
| gtg | acc | gcc | gcc | ggg | atc | act | ctc | ggc | atg | gac | gag | ctg | tac | aag | tcc | | 720 |
| Val | Thr | Ala | Ala | Gly | Ile | Thr | Leu | Gly | Met | Asp | Glu | Leu | Tyr | Lys | Ser | | |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 | | |
| gga | ctc | aga | tct | cga | gct | caa | gct | tcg | aat | tcg | acc | atg | gag | cgg | ccc | | 768 |
| Gly | Leu | Arg | Ser | Arg | Ala | Gln | Ala | Ser | Asn | Ser | Thr | Met | Glu | Arg | Pro | | |
| | | | | 245 | | | | | 250 | | | | | 255 | | | |
| ccg | ggg | ctg | cgg | ccg | ggc | gcg | ggc | ggg | ccc | tgg | gag | atg | cgg | gag | cgg | | 816 |
| Pro | Gly | Leu | Arg | Pro | Gly | Ala | Gly | Gly | Pro | Trp | Glu | Met | Arg | Glu | Arg | | |
| | | | | 260 | | | | 265 | | | | | 270 | | | | |
| ctg | ggc | acc | ggc | ggc | ttc | ggg | aac | gtc | tgt | ctg | tac | cag | cat | cgg | gaa | | 864 |
| Leu | Gly | Thr | Gly | Gly | Phe | Gly | Asn | Val | Cys | Leu | Tyr | Gln | His | Arg | Glu | | |
| | | | | 275 | | | 280 | | | | | 285 | | | | | |
| ctt | gat | ctc | aaa | ata | gca | att | aag | tct | tgt | cgc | cta | gag | cta | agt | acc | | 912 |
| Leu | Asp | Leu | Lys | Ile | Ala | Ile | Lys | Ser | Cys | Arg | Leu | Glu | Leu | Ser | Thr | | |
| | 290 | | | | | 295 | | | | | 300 | | | | | | |
| aaa | aac | aga | gaa | cga | tgg | tgc | cat | gaa | atc | cag | att | atg | aag | aag | ttg | | 960 |
| Lys | Asn | Arg | Glu | Arg | Trp | Cys | His | Glu | Ile | Gln | Ile | Met | Lys | Lys | Leu | | |
| 305 | | | | 310 | | | | | 315 | | | | | | 320 | | |
| aac | cat | gcc | aat | gtt | gta | aag | gcc | tgt | gat | gtt | cct | gaa | gaa | ttg | aat | | 1008 |
| Asn | His | Ala | Asn | Val | Lys | Ala | Cys | Asp | Val | Pro | Glu | Glu | Leu | Asn | | | |
| | | | | 325 | | | | 330 | | | | | 335 | | | | |
| att | ttg | att | cat | gat | gtg | cct | ctt | cta | gca | atg | gaa | tac | tgt | tct | gga | | 1056 |
| Ile | Leu | Ile | His | Asp | Val | Pro | Leu | Leu | Ala | Met | Glu | Tyr | Cys | Ser | Gly | | |
| | | | | 340 | | | | 345 | | | | | 350 | | | | |
| gga | gat | ctc | cga | aag | ctg | ctc | aac | aaa | cca | gaa | aat | tgt | tgt | gga | ctt | | 1104 |
| Gly | Asp | Leu | Arg | Lys | Leu | Leu | Asn | Lys | Pro | Glu | Asn | Cys | Cys | Gly | Leu | | |
| | | 355 | | | | 360 | | | | | 365 | | | | | | |
| aaa | gaa | agc | cag | ata | ctt | tct | tta | cta | agt | gat | ata | ggg | tct | ggg | att | | 1152 |
| Lys | Glu | Ser | Gln | Ile | Leu | Ser | Leu | Leu | Ser | Asp | Ile | Gly | Ser | Gly | Ile | | |
| | | | | 370 | | 375 | | | | 380 | | | | | | | |
| cga | tat | ttg | cat | gaa | aac | aaa | att | ata | cat | cga | gat | cta | aaa | cct | gaa | | 1200 |
| Arg | Tyr | Leu | His | Glu | Asn | Lys | Ile | Ile | His | Arg | Asp | Leu | Lys | Pro | Glu | | |
| | | | | 385 | | 390 | | | | 395 | | | | | 400 | | |
| aac | ata | gtt | ctt | cag | gat | gtt | ggg | gga | aag | ata | ata | cat | aaa | ata | att | | 1248 |
| Asn | Ile | Val | Leu | Gln | Asp | Val | Gly | Gly | Lys | Ile | Ile | His | Lys | Ile | Ile | | |
| | | | | 405 | | | | 410 | | | | | 415 | | | | |
| gat | ctg | gga | tat | gcc | aaa | gat | gtt | gat | caa | gga | agt | ctg | tgt | aca | tct | | 1296 |
| Asp | Leu | Gly | Tyr | Ala | Lys | Asp | Val | Asp | Gln | Gly | Ser | Leu | Cys | Thr | Ser | | |
| | | | | 420 | | | | 425 | | | | | 430 | | | | |
| ttt | gtg | gga | aca | ctg | cag | tat | ctg | gcc | cca | gag | ctc | ttt | gag | aat | aag | | 1344 |
| Phe | Val | Gly | Thr | Leu | Gln | Tyr | Leu | Ala | Pro | Glu | Leu | Phe | Glu | Asn | Lys | | |
| | | | | 435 | | | 440 | | | | | 445 | | | | | |
| cct | tac | aca | gcc | act | gtt | gat | tat | tgg | agc | ttt | ggg | acc | atg | gta | ttt | | 1392 |
| Pro | Tyr | Thr | Ala | Thr | Val | Asp | Tyr | Trp | Ser | Phe | Gly | Thr | Met | Val | Phe | | |
| | | | | 450 | | 455 | | | | | 460 | | | | | | |
| gaa | tgt | att | gct | gga | tat | agg | cct | ttt | ttg | cat | cat | ctg | cag | cca | ttt | | 1440 |
| Glu | Cys | Ile | Ala | Gly | Tyr | Arg | Pro | Phe | Leu | His | His | Leu | Gln | Pro | Phe | | |
| | | | | 465 | | 470 | | | 475 | | | | | 480 | | | |
| acc | tgg | cat | gag | aag | att | aag | aag | aag | gat | cca | aag | tgt | ata | ttt | gca | | 1488 |
| Thr | Trp | His | Glu | Lys | Ile | Lys | Lys | Lys | Asp | Pro | Lys | Cys | Ile | Phe | Ala | | |
| | | | | 485 | | | | 490 | | | | | 495 | | | | |
| tgt | gaa | gag | atg | tca | gga | gaa | gtt | cgg | ttt | agt | agc | cat | tta | cct | caa | | 1536 |
| Cys | Glu | Glu | Met | Ser | Gly | Glu | Val | Arg | Phe | Ser | Ser | His | Leu | Pro | Gln | | |
| | | | | 500 | | | 505 | | | | | | 510 | | | | |
| cca | aat | agc | ctt | tgt | agt | tta | ata | gta | gaa | ccc | atg | gaa | aac | tgg | cta | | 1584 |
| Pro | Asn | Ser | Leu | Cys | Ser | Leu | Ile | Val | Glu | Pro | Met | Glu | Asn | Trp | Leu | | |
| | | | | 515 | | | 520 | | | | | 525 | | | | | |
| cag | ttg | atg | ttg | aat | tgg | gac | cct | cag | cag | aga | gga | gga | cct | gtt | gac | | 1632 |
| Gln | Leu | Met | Leu | Asn | Trp | Asp | Pro | Gln | Gln | Arg | Gly | Gly | Pro | Val | Asp | | |
| | | | | 530 | | 535 | | | | | 540 | | | | | | |
| ctt | act | ttg | aag | cag | cca | aga | tgt | ttt | gta | tta | atg | gat | cac | att | ttg | | 1680 |

| | |
|---|------|
| Leu Thr Leu Lys Gln Pro Arg Cys Phe Val Leu Met Asp His Ile Leu | |
| 545 550 555 560 | |
| aat ttg aag ata gta cac atc cta aat atg act tct gca aag ata att | 1728 |
| Asn Leu Lys Ile Val His Ile Leu Asn Met Thr Ser Ala Lys Ile Ile | |
| 565 570 575 | |
| tct ttt ctg tta cca cct gat gaa agt ctt cat tca cta cag tct cgt | 1776 |
| Ser Phe Leu Leu Pro Pro Asp Glu Ser Leu His Ser Leu Gln Ser Arg | |
| 580 585 590 | |
| att gag cgt gaa act gga ata aat act ggt tct caa gaa ctt ctt tca | 1824 |
| Ile Glu Arg Glu Thr Gly Ile Asn Thr Gly Ser Gln Glu Leu Leu Ser | |
| 595 600 605 | |
| gag aca gga att tct ctg gat cct cgg aaa cca gcc tct caa tgt gtt | 1872 |
| Glu Thr Gly Ile Ser Leu Asp Pro Arg Lys Pro Ala Ser Gln Cys Val | |
| 610 615 620 | |
| cta gat gga gtt aga ggc tgt gat agc tat atg gtt tat ttg ttt gat | 1920 |
| Leu Asp Gly Val Arg Gly Cys Asp Ser Tyr Met Val Tyr Leu Phe Asp | |
| 625 630 635 640 | |
| aaa agt aaa act gta tat gaa ggg cca ttt gct tcc aga agt tta tct | 1968 |
| Lys Ser Lys Thr Val Tyr Glu Gly Pro Phe Ala Ser Arg Ser Leu Ser | |
| 645 650 655 | |
| gat tgt gta aat tat att gta cag gac agc ata cag ctt cca att | 2016 |
| Asp Cys Val Asn Tyr Ile Val Gln Asp Ser Lys Ile Gln Leu Pro Ile | |
| 660 665 670 | |
| ata cag ctg cgt aaa gtg tgg gct gaa gca gtg cac tat gtg tct gga | 2064 |
| Ile Gln Leu Arg Lys Val Trp Ala Glu Ala Val His Tyr Val Ser Gly | |
| 675 680 685 | |
| cta aaa gaa gac tat agc agg ctc ttt cag gga caa agg gca gca atg | 2112 |
| Leu Lys Glu Asp Tyr Ser Arg Leu Phe Gln Gly Gln Arg Ala Ala Met | |
| 690 695 700 | |
| tta agt ctt ctt aga tat aat gct aac tta aca aaa atg aag aac act | 2160 |
| Leu Ser Leu Leu Arg Tyr Asn Ala Asn Leu Thr Lys Met Lys Asn Thr | |
| 705 710 715 720 | |
| ttg atc tca gca tca caa caa ctg aaa gct aaa ttg gag ttt ttt cac | 2208 |
| Leu Ile Ser Ala Ser Gln Gln Leu Lys Ala Lys Leu Glu Phe Phe His | |
| 725 730 735 | |
| aaa agc att cag ctt gac ttg gag aga tac agc gag cag atg acg tat | 2256 |
| Lys Ser Ile Gln Leu Asp Leu Glu Arg Tyr Ser Glu Gln Met Thr Tyr | |
| 740 745 750 | |
| ggg ata tct tca gaa aaa atg cta aaa gca tgg aaa gaa atg gaa gaa | 2304 |
| Gly Ile Ser Ser Glu Lys Met Leu Lys Ala Trp Lys Glu Met Glu Glu | |
| 755 760 765 | |
| aag gcc atc cac tat gct gag gtt ggt gtc att gga tac ctg gag gat | 2352 |
| Lys Ala Ile His Tyr Ala Glu Val Gly Val Ile Gly Tyr Leu Glu Asp | |
| 770 775 780 | |
| cag att atg tct ttg cat gct gaa atc atg ggg cta cag aag agc ccc | 2400 |
| Gln Ile Met Ser Leu His Ala Glu Ile Met Gly Leu Gln Lys Ser Pro | |
| 785 790 795 800 | |
| tat gga aga cgt cag gga gac ttg atg gaa tct ctg gaa cag cgt gcc | 2448 |
| Tyr Gly Arg Arg Gln Gly Asp Leu Met Glu Ser Leu Glu Gln Arg Ala | |
| 805 810 815 | |
| att gat cta tat aag cag tta aaa cac aga cct tca gat cac tcc tac | 2496 |
| Ile Asp Leu Tyr Lys Gln Leu Lys His Arg Pro Ser Asp His Ser Tyr | |
| 820 825 830 | |
| agt gac agc aca gag atg gtg aaa atc att gtg cac act gtg cag agt | 2544 |
| Ser Asp Ser Thr Glu Met Val Lys Ile Ile Val His Thr Val Gln Ser | |
| 835 840 845 | |
| cag gac cgt gtg ctc aag gag ctg ttt ggt cat ttg agc aag ttg ttg | 2592 |
| Gln Asp Arg Val Leu Lys Glu Leu Phe Gly His Leu Ser Lys Leu Leu | |
| 850 855 860 | |
| ggc tgt aag cag aag att att gat cta ctc cct aag gtg gaa gtg gcc | 2640 |
| Gly Cys Lys Gln Lys Ile Ile Asp Leu Leu Pro Lys Val Glu Val Ala | |
| 865 870 875 880 | |
| ctc agt aat atc aaa gaa gct gac aat act gtc atg ttc atg cag gga | 2688 |

| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|--|
| Leu | Ser | Asn | Ile | Lys | Glu | Ala | Asp | Asn | Thr | Val | Met | Phe | Met | Gln | Gly | | |
| | | | | 885 | | | | | 890 | | | | | 895 | | | |
| aaa | agg | cag | aaa | gaa | ata | tgg | cat | ctc | ctt | aaa | att | gcc | tgt | aca | cag | 2736 | |
| Lys | Arg | Gln | Lys | Glu | Ile | Trp | His | Leu | Leu | Lys | Ile | Ala | Cys | Thr | Gln | | |
| | | | 900 | | | | | 905 | | | | | 910 | | | | |
| agt | tct | gcc | cgc | tct | ctt | gta | gga | tcc | agt | cta | gaa | ggg | gca | gta | acc | 2784 | |
| Ser | Ser | Ala | Arg | Ser | Leu | Val | Gly | Ser | Ser | Leu | Glu | Gly | Ala | Val | Thr | | |
| | | 915 | | | | | 920 | | | | | 925 | | | | | |
| cct | cag | aca | tca | gca | tgg | ctg | ccc | ccg | act | tca | gca | gaa | cat | gat | cat | 2832 | |
| Pro | Gln | Thr | Ser | Ala | Trp | Leu | Pro | Pro | Thr | Ser | Ala | Glu | His | Asp | His | | |
| | | 930 | | | | 935 | | | | | 940 | | | | | | |
| tct | ctg | tca | tgt | gtg | gta | act | cct | caa | gat | ggg | gag | act | tca | gca | caa | 2880 | |
| Ser | Leu | Ser | Cys | Val | Val | Thr | Pro | Gln | Asp | Gly | Glu | Thr | Ser | Ala | Gln | | |
| | | | | | 950 | | | | | 955 | | | | | 960 | | |
| atg | ata | gaa | gaa | aat | ttg | aac | tgc | ctt | ggc | cat | tta | agc | act | att | att | 2928 | |
| Met | Ile | Glu | Glu | Asn | Leu | Asn | Cys | Leu | Gly | His | Leu | Ser | Thr | Ile | Ile | | |
| | | | | 965 | | | | 970 | | | | | | 975 | | | |
| cat | gag | gca | aat | gag | gaa | cag | ggc | aat | agt | atg | atg | aat | ctt | gat | tgg | 2976 | |
| His | Glu | Ala | Asn | Glu | Glu | Gln | Gly | Asn | Ser | Met | Met | Asn | Leu | Asp | Trp | | |
| | | | 980 | | | | | 985 | | | | | 990 | | | | |
| agt | tgg | tta | aca | gaa | tga | | | | | | | | | | | 2994 | |
| Ser | Trp | Leu | Thr | Glu | | | | | | | | | | | | | |
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<212> PRT

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<220>

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<400> 121

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| Met | Val | Ser | Lys | Gly | Glu | Glu | Leu | Phe | Thr | Gly | Val | Val | Pro | Ile | Leu | | |
| 1 | | | | 5 | | | | 10 | | | | | | 15 | | | |
| Val | Glu | Leu | Asp | Gly | Asp | Val | Asn | Gly | His | Lys | Phe | Ser | Val | Ser | Gly | | |
| | | | 20 | | | | 25 | | | | | | 30 | | | | |
| Glu | Gly | Glu | Gly | Asp | Ala | Thr | Tyr | Gly | Lys | Leu | Thr | Leu | Lys | Phe | Ile | | |
| | | 35 | | | | 40 | | | | | 45 | | | | | | |
| Cys | Thr | Thr | Gly | Lys | Leu | Pro | Val | Pro | Trp | Pro | Thr | Leu | Val | Thr | Thr | | |
| | 50 | | | | 55 | | | 60 | | | | | | | | | |
| Leu | Thr | Tyr | Gly | Val | Gln | Cys | Phe | Ser | Arg | Tyr | Pro | Asp | His | Met | Lys | | |
| 65 | | | | 70 | | | | 75 | | | | | | 80 | | | |
| Gln | His | Asp | Phe | Phe | Lys | Ser | Ala | Met | Pro | Glu | Gly | Tyr | Val | Gln | Glu | | |
| | | | 85 | | | | | 90 | | | | | | 95 | | | |
| Arg | Thr | Ile | Phe | Lys | Asp | Asp | Gly | Asn | Tyr | Lys | Thr | Arg | Ala | Glu | | | |
| | | 100 | | | | | 105 | | | | | 110 | | | | | |
| Val | Lys | Phe | Glu | Gly | Asp | Thr | Leu | Val | Asn | Arg | Ile | Glu | Leu | Lys | Gly | | |
| | | 115 | | | | 120 | | | | | | 125 | | | | | |
| Ile | Asp | Phe | Lys | Glu | Asp | Gly | Asn | Ile | Leu | Gly | His | Lys | Leu | Glu | Tyr | | |
| | 130 | | | | 135 | | | 140 | | | | | | | | | |
| Asn | Tyr | Asn | Ser | His | Asn | Val | Tyr | Ile | Met | Ala | Asp | Lys | Gln | Lys | Asn | | |
| | | | | 150 | | | | 155 | | | | | | 160 | | | |
| Gly | Ile | Lys | Val | Asn | Phe | Lys | Ile | Arg | His | Asn | Ile | Glu | Asp | Gly | Ser | | |
| | | | 165 | | | | 170 | | | | | | 175 | | | | |
| Val | Gln | Leu | Ala | Asp | His | Tyr | Gln | Gln | Asn | Thr | Pro | Ile | Gly | Asp | Gly | | |

| | | | | | | | | | | | | | | | |
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| Leu | Lys | Glu | Asp | Tyr | Ser | Arg | Leu | Phe | Gln | Gly | Gln | Arg | Ala | Ala | Met |
| 690 | | | | | | 695 | | | | | 700 | | | | |
| Leu | Ser | Leu | Leu | Arg | Tyr | Asn | Ala | Asn | Leu | Thr | Lys | Met | Lys | Asn | Thr |
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| Leu | Ile | Ser | Ala | Ser | Gln | Gln | Leu | Lys | Ala | Lys | Leu | Glu | Phe | Phe | His |
| | | | | 725 | | | | | 730 | | | | | 735 | |
| Lys | Ser | Ile | Gln | Leu | Asp | Leu | Glu | Arg | Tyr | Ser | Glu | Gln | Met | Thr | Tyr |
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| Gly | Ile | Ser | Ser | Glu | Lys | Met | Leu | Lys | Ala | Trp | Lys | Glu | Met | Glu | Glu |
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| Lys | Ala | Ile | His | Tyr | Ala | Glu | Val | Gly | Val | Ile | Gly | Tyr | Leu | Glu | Asp |
| | 770 | | | | | 775 | | | | | 780 | | | | |
| Gln | Ile | Met | Ser | Leu | His | Ala | Glu | Ile | Met | Gly | Leu | Gln | Lys | Ser | Pro |
| 785 | | | | | 790 | | | | | 795 | | | | | 800 |
| Tyr | Gly | Arg | Arg | Gln | Gly | Asp | Leu | Met | Glu | Ser | Leu | Glu | Gln | Arg | Ala |
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| Ile | Asp | Leu | Tyr | Lys | Gln | Leu | Lys | His | Arg | Pro | Ser | Asp | His | Ser | Tyr |
| | | 820 | | | | | | 825 | | | | | 830 | | |
| Ser | Asp | Ser | Thr | Glu | Met | Val | Lys | Ile | Ile | Val | His | Thr | Val | Gln | Ser |
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| Gln | Asp | Arg | Val | Leu | Lys | Glu | Leu | Phe | Gly | His | Leu | Ser | Lys | Leu | Leu |
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| Gly | Cys | Lys | Gln | Lys | Ile | Ile | Asp | Leu | Leu | Pro | Lys | Val | Glu | Val | Ala |
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| Ser | Ser | Ala | Arg | Ser | Leu | Val | Gly | Ser | Ser | Leu | Glu | Gly | Ala | Val | Thr |
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| 945 | | | | | 950 | | | | | 955 | | | | | 960 |
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| | | | | 965 | | | | | 970 | | | | | 975 | |
| His | Glu | Ala | Asn | Glu | Glu | Gln | Gly | Asn | Ser | Met | Met | Asn | Leu | Asp | Trp |
| | | | 980 | | | | | 985 | | | | | 990 | | |
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| Met Glu Arg Pro Pro Gly Leu Arg Pro Gly Ala Gly Gly Pro Trp Glu | | | | | | | | | | | | | | | | |
| 1 | 5 | | | | | | | | | | | | | | | |
| atg cgg gag cgg ctg ggc acc ggc ggc ttc ggg aac gtc tgt ctg tac | | | | | | | | | | | | | | | | 96 |
| Met Arg Glu Arg Leu Gly Thr Gly Gly Phe Gly Asn Val Cys Leu Tyr | | | | | | | | | | | | | | | | |
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| cag cat cgg gaa ctt gat ctc aaa ata gca att aag tct tgt cgc cta | | | | | | | | | | | | | | | | 144 |
| Gln His Arg Glu Leu Asp Leu Lys Ile Ala Ile Lys Ser Cys Arg Leu | | | | | | | | | | | | | | | | |
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| gag cta agt acc aaa aac aga gaa cga tgg tgc cat gaa atc cag att | | | | | | | | | | | | | | | | 192 |
| Glu Leu Ser Thr Lys Asn Arg Glu Arg Trp Cys His Glu Ile Gln Ile | | | | | | | | | | | | | | | | |
| | 50 | | | | | | | | | | | | | | | |
| atg aag aag ttg aac cat gcc aat gtt gta aag gcc tgt gat gtt cct | | | | | | | | | | | | | | | | 240 |
| Met Lys Lys Leu Asn His Ala Asn Val Val Lys Ala Cys Asp Val Pro | | | | | | | | | | | | | | | | |
| 65 | 70 | | | | | | | | | | | | | | | |
| gaa gaa ttg aat att ttg att cat gat gtg cct ctt cta gca atg gaa | | | | | | | | | | | | | | | | 288 |
| Glu Glu Leu Asn Ile Leu Ile His Asp Val Pro Leu Leu Ala Met Glu | | | | | | | | | | | | | | | | |
| | 85 | | | | | | | | | | | | | | | |
| tac tgt tct gga gga gat ctc cga aag ctg ctc aac aaa cca gaa aat | | | | | | | | | | | | | | | | 336 |
| Tyr Cys Ser Gly Gly Asp Leu Arg Lys Leu Leu Asn Lys Pro Glu Asn | | | | | | | | | | | | | | | | |
| | 100 | | | | | | | | | | | | | | | |
| tgt tgt gga ctt aaa gaa agc cag ata ctt tct tta cta agt gat ata | | | | | | | | | | | | | | | | 384 |
| Cys Cys Gly Leu Lys Glu Ser Gln Ile Leu Ser Leu Leu Ser Asp Ile | | | | | | | | | | | | | | | | |
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| ggg tct ggg att cga tat ttg cat gaa aac aaa att ata cat cga gat | | | | | | | | | | | | | | | | 432 |
| Gly Ser Gly Ile Arg Tyr Leu His Glu Asn Lys Ile Ile His Arg Asp | | | | | | | | | | | | | | | | |
| | 130 | | | | | | | | | | | | | | | |
| cta aaa cct gaa aac ata gtt ctt cag gat gtt ggt gga aag ata ata | | | | | | | | | | | | | | | | 480 |
| Leu Lys Pro Glu Asn Ile Val Leu Gln Asp Val Gly Gly Lys Ile Ile | | | | | | | | | | | | | | | | |
| 145 | 150 | | | | | | | | | | | | | | | |
| cat aaa ata att gat ctg gga tat gcc aaa gat gtt gat caa gga agt | | | | | | | | | | | | | | | | 528 |
| His Lys Ile Ile Asp Leu Gly Tyr Ala Lys Asp Val Asp Gln Gly Ser | | | | | | | | | | | | | | | | |
| | 165 | | | | | | | | | | | | | | | |
| ctg tgt aca tct ttt gtg gga aca ctg cag tat ctg gcc cca gag ctc | | | | | | | | | | | | | | | | 576 |
| Leu Cys Thr Ser Phe Val Gly Thr Leu Gln Tyr Leu Ala Pro Glu Leu | | | | | | | | | | | | | | | | |
| | 180 | | | | | | | | | | | | | | | |
| ttt gag aat aag cct tac aca gcc act gtt gat tat tgg agc ttt ggg | | | | | | | | | | | | | | | | 624 |
| Phe Glu Asn Lys Pro Tyr Thr Ala Thr Val Asp Tyr Trp Ser Phe Gly | | | | | | | | | | | | | | | | |
| | 195 | | | | | | | | | | | | | | | |
| acc atg gta ttt gaa tgt att gct gga tat agg cct ttt ttg cat cat | | | | | | | | | | | | | | | | 672 |
| Thr Met Val Phe Glu Cys Ile Ala Gly Tyr Arg Pro Phe Leu His His | | | | | | | | | | | | | | | | |
| | 210 | | | | | | | | | | | | | | | |
| ctg cag cca ttt acc tgg cat gag aag att aag aag aag gat cca aag | | | | | | | | | | | | | | | | 720 |
| Leu Gln Pro Phe Thr Trp His Glu Lys Ile Lys Lys Lys Asp Pro Lys | | | | | | | | | | | | | | | | |
| 225 | 230 | | | | | | | | | | | | | | | |
| tgt ata ttt gca tgt gaa gag atg tca gga gaa gtt cgg ttt agt agc | | | | | | | | | | | | | | | | 768 |
| Cys Ile Phe Ala Cys Glu Glu Met Ser Gly Gln Val Arg Phe Ser Ser | | | | | | | | | | | | | | | | |
| | 245 | | | | | | | | | | | | | | | |
| cat tta cct caa cca aat agc ctt tgt agt tta ata gta gaa ccc atg | | | | | | | | | | | | | | | | 816 |
| His Leu Pro Gln Pro Asn Ser Leu Cys Ser Leu Ile Val Glu Pro Met | | | | | | | | | | | | | | | | |
| | 260 | | | | | | | | | | | | | | | |
| gaa aac tgg cta cag ttg atg ttg aat tgg gac cct cag cag aga gga | | | | | | | | | | | | | | | | 864 |
| Glu Asn Trp Leu Gln Leu Met Leu Asn Trp Asp Pro Gln Gln Arg Gly | | | | | | | | | | | | | | | | |
| | 275 | | | | | | | | | | | | | | | |
| gga cct gtt gac ctt act ttg aag cag cca aga tgt ttt gta tta atg | | | | | | | | | | | | | | | | 912 |
| Gly Pro Val Asp Leu Thr Leu Lys Gln Pro Arg Cys Phe Val Leu Met | | | | | | | | | | | | | | | | |
| | 290 | | | | | | | | | | | | | | | |
| gat cac att ttg aat ttg aag ata gta cac atc cta aat atg act tct | | | | | | | | | | | | | | | | 960 |
| Asp His Ile Leu Asn Leu Lys Ile Val His Ile Leu Asn Met Thr Ser | | | | | | | | | | | | | | | | |
| | 305 | | | | | | | | | | | | | | | |
| | 310 | | | | | | | | | | | | | | | |
| | 315 | | | | | | | | | | | | | | | |
| | 320 | | | | | | | | | | | | | | | |

| | |
|---|------|
| gca aag ata att tct ttt ctg tta cca cct gat gaa agt ctt cat tca | 1008 |
| Ala Lys Ile Ile Ser Phe Leu Leu Pro Pro Asp Glu Ser Leu His Ser | |
| 325 330 335 | |
| cta cag tct cgt att gag cgt gaa act gga ata aat act ggt tct caa | 1056 |
| Leu Gln Ser Arg Ile Glu Arg Glu Thr Gly Ile Asn Thr Gly Ser Gln | |
| 340 345 350 | |
| gaa ctt ctt tca gag aca gga att tct ctg gat cct cgg aaa cca gcc | 1104 |
| Glu Leu Leu Ser Glu Thr Gly Ile Ser Leu Asp Pro Arg Lys Pro Ala | |
| 355 360 365 | |
| tct caa tgt gtt cta gat gga gtt aga ggc tgt gat agc tat atg gtt | 1152 |
| Ser Gln Cys Val Leu Asp Gly Val Arg Gly Cys Asp Ser Tyr Met Val | |
| 370 375 380 | |
| tat ttg ttt gat aaa agt aaa act gta tat gaa ggg cca ttt gct tcc | 1200 |
| Tyr Leu Phe Asp Lys Ser Lys Thr Val Tyr Glu Gly Pro Phe Ala Ser | |
| 385 390 395 400 | |
| aga agt tta tct gat tgt gta aat tat att gta cag gac agc aaa ata | 1248 |
| Arg Ser Leu Ser Asp Cys Val Asn Tyr Ile Val Gln Asp Ser Lys Ile | |
| 405 410 415 | |
| cag ctt cca att ata cag ctg cgt aaa gtg tgg gct gaa gca gtg cac | 1296 |
| Gln Leu Pro Ile Ile Gln Leu Arg Lys Val Trp Ala Glu Ala Val His | |
| 420 425 430 | |
| tat gtg tct gga cta aaa gaa gac tat agc agg ctc ttt cag gga caa | 1344 |
| Tyr Val Ser Gly Leu Lys Glu Asp Tyr Ser Arg Leu Phe Gln Gly Gln | |
| 435 440 445 | |
| agg gca gca atg tta agt ctt ctt aga tat aat gct aac tta aca aaa | 1392 |
| Arg Ala Ala Met Leu Ser Leu Leu Arg Tyr Asn Ala Asn Leu Thr Lys | |
| 450 455 460 | |
| atg aag aac act ttg atc tca gca tca caa caa ctg aaa gct aaa ttg | 1440 |
| Met Lys Asn Thr Leu Ile Ser Ala Ser Gln Gln Leu Lys Ala Lys Leu | |
| 465 470 475 480 | |
| gag ttt ttt cac aaa agc att cag ctt gac ttg gag aga tac agc gag | 1488 |
| Glu Phe Phe His Lys Ser Ile Gln Leu Asp Leu Glu Arg Tyr Ser Glu | |
| 485 490 495 | |
| cag atg acg tat ggg ata tct tca gaa aaa atg cta aaa gca tgg aaa | 1536 |
| Gln Met Thr Tyr Gly Ile Ser Ser Glu Lys Met Leu Lys Ala Trp Lys | |
| 500 505 510 | |
| gaa atg gaa gaa aag gcc atc cac tat gct gag gtt ggt gtc att gga | 1584 |
| Glu Met Glu Glu Lys Ala Ile His Tyr Ala Glu Val Gly Val Ile Gly | |
| 515 520 525 | |
| tac ctg gag gat cag att atg tct ttg cat gct gaa atc atg ggg cta | 1632 |
| Tyr Leu Glu Asp Gln Ile Met Ser Leu His Ala Glu Ile Met Gly Leu | |
| 530 535 540 | |
| cag aag agc ccc tat gga aga cgt cag gga gac ttg atg gaa tct ctg | 1680 |
| Gln Lys Ser Pro Tyr Gly Arg Arg Gln Gly Asp Leu Met Glu Ser Leu | |
| 545 550 555 560 | |
| gaa cag cgt gcc att gat cta tat aag cag tta aaa cac aga cct tca | 1728 |
| Glu Gln Arg Ala Ile Asp Leu Tyr Lys Gln Leu Lys His Arg Pro Ser | |
| 565 570 575 | |
| gat cac tcc tac agt gac agc aca gag atg gtg aaa atc att gtg cac | 1776 |
| Asp His Ser Tyr Ser Asp Ser Thr Glu Met Val Lys Ile Ile Val His | |
| 580 585 590 | |
| act gtg cag agt cag gac cgt gtg ctc aag gag ctg ttt ggt cat ttg | 1824 |
| Thr Val Gln Ser Gln Asp Arg Val Leu Lys Glu Leu Phe Gly His Leu | |
| 595 600 605 | |
| agc aag ttg ttg ggc tgt aag cag aag att att gat cta ctc cct aag | 1872 |
| Ser Lys Leu Leu Gly Cys Lys Gln Lys Ile Ile Asp Leu Leu Pro Lys | |
| 610 615 620 | |
| gtg gaa gtg gcc ctc agt aat atc aaa gaa gct gac aat act gtc atg | 1920 |
| Val Glu Val Ala Leu Ser Asn Ile Lys Glu Ala Asp Asn Thr Val Met | |
| 625 630 635 640 | |
| ttc atg cag gga aaa agg cag aaa gaa ata tgg cat ctc ctt aaa att | 1968 |
| Phe Met Gln Gly Lys Arg Gln Lys Glu Ile Trp His Leu Leu Lys Ile | |
| 645 650 655 | |

| | |
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| gcc tgt aca cag agt tct gcc cgc tct ctt gta gga tcc agt cta gaa | 2016 |
| Ala Cys Thr Gln Ser Ser Ala Arg Ser Leu Val Gly Ser Ser Leu Glu | |
| 660 665 670 | |
| ggt gca gta acc cct cag aca tca gca tgg ctg ccc ccg act tca gca | 2064 |
| Gly Ala Val Thr Pro Gln Thr Ser Ala Trp Leu Pro Pro Thr Ser Ala | |
| 675 680 685 | |
| gaa cat gat cat tct ctg tca tgt gtg gta act cct caa gat ggg gag | 2112 |
| Glu His Asp His Ser Leu Ser Cys Val Val Thr Pro Gln Asp Gly Glu | |
| 690 695 700 | |
| act tca gca caa atg ata gaa gaa aat ttg aac tgc ctt ggc cat tta | 2160 |
| Thr Ser Ala Gln Met Ile Glu Glu Asn Leu Asn Cys Leu Gly His Leu | |
| 705 710 715 720 | |
| agc act att att cat gag gca aat gag gaa cag ggc aat agt atg atg | 2208 |
| Ser Thr Ile Ile His Glu Ala Asn Glu Glu Gln Gly Asn Ser Met Met | |
| 725 730 735 | |
| aat ctt gat tgg agt tgg tta aca gaa tgg gta ccg cgg gcc cgg gat | 2256 |
| Asn Leu Asp Trp Ser Trp Leu Thr Glu Trp Val Pro Arg Ala Arg Asp | |
| 740 745 750 | |
| cca ccg gtc gcc acc atg gtg agc aag ggc gag gag ctg ttc acc ggg | 2304 |
| Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly | |
| 755 760 765 | |
| gtg gtg ccc atc ctg gtc gag ctg gac ggc gac gta aac ggc cac aag | 2352 |
| Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly His Lys | |
| 770 775 780 | |
| ttc agc gtg tcc ggc gag ggc gag ggc gat gcc acc tac ggc aag ctg | 2400 |
| Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu | |
| 785 790 795 800 | |
| acc ctg aag ttc atc tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc | 2448 |
| Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro | |
| 805 810 815 | |
| acc ctc gtg acc acc ctg acc tac ggc gtg cag tgc ttc agc cgc tac | 2496 |
| Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr | |
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| ccc gac cac atg aag cag cac gac ttc ttc aag tcc gcc atg ccc gaa | 2544 |
| Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu | |
| 835 840 845 | |
| ggc tac gtc cag gag cgc acc atc ttc ttc aag gac gac ggc aac tac | 2592 |
| Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr | |
| 850 855 860 | |
| aag acc cgc gcc gag gtg aag ttc gag ggc gac acc ctg gtg aac cgc | 2640 |
| Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg | |
| 865 870 875 880 | |
| atc gag ctg aag ggc atc gac ttc aag gag gac ggc aac atc ctg ggg | 2688 |
| Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly | |
| 885 890 895 | |
| cac aag ctg gag tac aac tac aac agc cac aac gtc tat atc atg gcc | 2736 |
| His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala | |
| 900 905 910 | |
| gac aag cag aag aac ggc atc aag gtg aac ttc aag atc cgc cac aac | 2784 |
| Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn | |
| 915 920 925 | |
| atc gag gac ggc agc gtg cag ctc gcc gac cac tac cag cag aac acc | 2832 |
| Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr | |
| 930 935 940 | |
| ccc atc ggc gac ggc ccc gtg ctg ctg ccc gac aac cac tac ctg agc | 2880 |
| Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser | |
| 945 950 955 960 | |
| acc cag tcc gcc ctg agc aaa gac ccc aac gag aag cgc gat cac atg | 2928 |
| Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met | |
| 965 970 975 | |
| gtc ctg ctg gag ttc gtg acc gcc gcc ggg atc act ctc ggc atg gac | 2976 |
| Val Leu Leu Phe Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp | |
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2991

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| 1 | | | | 5 | | | | | 10 | | | | | 15 | | |
| Met | Arg | Glu | Arg | Leu | Gly | Thr | Gly | Gly | Phe | Gly | Asn | Val | Cys | Leu | Tyr | |
| | | | 20 | | | | | 25 | | | | | 30 | | | |
| Gln | His | Arg | Glu | Leu | Asp | Leu | Lys | Ile | Ala | Ile | Lys | Ser | Cys | Arg | Leu | |
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| Glu | Leu | Ser | Thr | Lys | Asn | Arg | Glu | Arg | Trp | Cys | His | Glu | Ile | Gln | Ile | |
| | 50 | | | | 55 | | | | | | 60 | | | | | |
| Met | Lys | Lys | Leu | Asn | His | Ala | Asn | Val | Val | Lys | Ala | Cys | Asp | Val | Pro | |
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| | | | 100 | | | | | 105 | | | | | 110 | | | |
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| | 130 | | | | | 135 | | | | | 140 | | | | | |
| Leu | Lys | Pro | Glu | Asn | Ile | Val | Leu | Gln | Asp | Val | Gly | Gly | Lys | Ile | Ile | |
| 145 | | | | 150 | | | | | | 155 | | | | | 160 | |
| His | Lys | Ile | Ile | Asp | Leu | Gly | Tyr | Ala | Lys | Asp | Val | Asp | Gln | Gly | Ser | |
| | | | 165 | | | | | 170 | | | | | | 175 | | |
| Leu | Cys | Thr | Ser | Phe | Val | Gly | Thr | Leu | Gln | Tyr | Leu | Ala | Pro | Glu | Leu | |
| | | 180 | | | | | | 185 | | | | | 190 | | | |
| Phe | Glu | Asn | Lys | Pro | Tyr | Thr | Ala | Thr | Val | Asp | Tyr | Trp | Ser | Phe | Gly | |
| | 195 | | | | | 200 | | | | | | 205 | | | | |
| Thr | Met | Val | Phe | Glu | Cys | Ile | Ala | Gly | Tyr | Arg | Pro | Phe | Leu | His | His | |
| | 210 | | | | | 215 | | | | | 220 | | | | | |
| Leu | Gln | Pro | Phe | Thr | Trp | His | Glu | Lys | Ile | Lys | Lys | Lys | Asp | Pro | Lys | |
| 225 | | | | 230 | | | | | | 235 | | | | | 240 | |
| Cys | Ile | Phe | Ala | Cys | Glu | Glu | Met | Ser | Gly | Glu | Val | Arg | Phe | Ser | Ser | |
| | | | 245 | | | | | | 250 | | | | | 255 | | |
| His | Leu | Pro | Gln | Pro | Asn | Ser | Leu | Cys | Ser | Leu | Ile | Val | Glu | Pro | Met | |
| | | 260 | | | | | | 265 | | | | | 270 | | | |
| Glu | Asn | Trp | Leu | Gln | Leu | Met | Leu | Asn | Trp | Asp | Pro | Gln | Gln | Arg | Gly | |
| | 275 | | | | | 280 | | | | | | 285 | | | | |
| Gly | Pro | Val | Asp | Leu | Thr | Leu | Lys | Gln | Pro | Arg | Cys | Phe | Val | Leu | Met | |
| | 290 | | | | | 295 | | | | | 300 | | | | | |
| Asp | His | Ile | Leu | Asn | Leu | Lys | Ile | Val | His | Ile | Leu | Asn | Met | Thr | Ser | |
| 305 | | | | 310 | | | | | | 315 | | | | | 320 | |
| Ala | Lys | Ile | Ile | Ser | Phe | Leu | Leu | Pro | Pro | Asp | Glu | Ser | Leu | His | Ser | |
| | | | 325 | | | | | | 330 | | | | | 335 | | |
| Leu | Gln | Ser | Arg | Ile | Glu | Arg | Glu | Thr | Gly | Ile | Asn | Thr | Gly | Ser | Gln | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | 340 | | | | | 345 | | | | 350 | | | |
| Glu | Leu | Leu | Ser | Glu | Thr | Gly | Ile | Ser | Leu | Asp | Pro | Arg | Lys | Pro | Ala |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Ser | Gln | Cys | Val | Leu | Asp | Gly | Val | Arg | Gly | Cys | Asp | Ser | Tyr | Met | Val |
| | 370 | | | | | 375 | | | | | 380 | | | | |
| Tyr | Leu | Phe | Asp | Lys | Ser | Lys | Thr | Val | Tyr | Glu | Gly | Pro | Phe | Ala | Ser |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Arg | Ser | Leu | Ser | Asp | Cys | Val | Asn | Tyr | Ile | Val | Gln | Asp | Ser | Lys | Ile |
| | | | | 405 | | | | | 410 | | | | | 415 | |
| Gln | Leu | Pro | Ile | Ile | Gln | Leu | Arg | Lys | Val | Trp | Ala | Glu | Ala | Val | His |
| | | | | 420 | | | | 425 | | | | | 430 | | |
| Tyr | Val | Ser | Gly | Leu | Lys | Glu | Asp | Tyr | Ser | Arg | Leu | Phe | Gln | Gly | Gln |
| | | 435 | | | | | 440 | | | | | 445 | | | |
| Arg | Ala | Ala | Met | Leu | Ser | Leu | Leu | Arg | Tyr | Asn | Ala | Asn | Leu | Thr | Lys |
| | 450 | | | | | 455 | | | | | 460 | | | | |
| Met | Lys | Asn | Thr | Leu | Ile | Ser | Ala | Ser | Gln | Gln | Leu | Lys | Ala | Lys | Leu |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 |
| Glu | Phe | Phe | His | Lys | Ser | Ile | Gln | Leu | Asp | Leu | Glu | Arg | Tyr | Ser | Glu |
| | | | | 485 | | | | | 490 | | | | | 495 | |
| Gln | Met | Thr | Tyr | Gly | Ile | Ser | Ser | Glu | Lys | Met | Leu | Lys | Ala | Trp | Lys |
| | | | 500 | | | | | 505 | | | | | 510 | | |
| Glu | Met | Glu | Glu | Lys | Ala | Ile | His | Tyr | Ala | Glu | Val | Gly | Val | Ile | Gly |
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| Tyr | Leu | Glu | Asp | Gln | Ile | Met | Ser | Leu | His | Ala | Glu | Ile | Met | Gly | Leu |
| | 530 | | | | | 535 | | | | | 540 | | | | |
| Gln | Lys | Ser | Pro | Tyr | Gly | Arg | Arg | Gln | Gly | Asp | Leu | Met | Glu | Ser | Leu |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 |
| Glu | Gln | Arg | Ala | Ile | Asp | Leu | Tyr | Lys | Gln | Leu | Lys | His | Arg | Pro | Ser |
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| Asp | His | Ser | Tyr | Ser | Asp | Ser | Thr | Glu | Met | Val | Lys | Ile | Ile | Val | His |
| | | | 580 | | | | | 585 | | | | | 590 | | |
| Thr | Val | Gln | Ser | Gln | Asp | Arg | Val | Leu | Lys | Glu | Leu | Phe | Gly | His | Leu |
| | | 595 | | | | | 600 | | | | | 605 | | | |
| Ser | Lys | Leu | Leu | Gly | Cys | Lys | Gln | Lys | Ile | Ile | Asp | Leu | Leu | Pro | Lys |
| | 610 | | | | | 615 | | | | | 620 | | | | |
| Val | Glu | Val | Ala | Leu | Ser | Asn | Ile | Lys | Glu | Ala | Asp | Asn | Thr | Val | Met |
| 625 | | | | | 630 | | | | | 635 | | | | | 640 |
| Phe | Met | Gln | Gly | Lys | Arg | Gln | Lys | Glu | Ile | Trp | His | Leu | Leu | Lys | Ile |
| | | | | 645 | | | | | 650 | | | | | 655 | |
| Ala | Cys | Thr | Gln | Ser | Ser | Ala | Arg | Ser | Leu | Val | Gly | Ser | Ser | Leu | Glu |
| | | | 660 | | | | | 665 | | | | | 670 | | |
| Gly | Ala | Val | Thr | Pro | Gln | Thr | Ser | Ala | Trp | Leu | Pro | Pro | Thr | Ser | Ala |
| | | 675 | | | | | 680 | | | | | 685 | | | |
| Glu | His | Asp | His | Ser | Leu | Ser | Cys | Val | Val | Thr | Pro | Gln | Asp | Gly | Glu |
| | 690 | | | | </ | | | | | | | | | | |

Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr
 850 855 860
 Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg
 865 870 875 880
 Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly
 885 890 895
 His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala
 900 905 910
 Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn
 915 920 925
 Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr
 930 935 940
 Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser
 945 950 955 960
 Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met
 965 970 975
 Val Leu Leu Glu Phe Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp
 980 985 990
 Glu Leu Tyr Lys
 995

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<211> 1908

<212> DNA

<213> Artificial Sequence

<220>

<223> EGFP-VASP fusion

<220>

<221> CDS

<222> (1)..(1905)

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| Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu | | |
| 1 5 10 15 | | |
| gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc | | 96 |
| Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly | | |
| 20 25 30 | | |
| gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc | | 144 |
| Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile | | |
| 35 40 45 | | |
| tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc | | 192 |
| Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr | | |
| 50 55 60 | | |
| ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag | | 240 |
| Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys | | |
| 65 70 75 80 | | |
| cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag | | 288 |
| Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu | | |
| 85 90 95 | | |

| | |
|---|------|
| cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag | 336 |
| Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu | |
| 100 110 | |
| gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc | 384 |
| Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly | |
| 115 120 125 | |
| atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac | 432 |
| Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr | |
| 130 135 140 | |
| aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac | 480 |
| Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn | |
| 145 150 155 160 | |
| ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc | 528 |
| Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser | |
| 165 170 175 | |
| gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc | 576 |
| Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly | |
| 180 185 190 | |
| ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg | 624 |
| Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu | |
| 195 200 205 | |
| agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc | 672 |
| Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe | |
| 210 215 220 | |
| gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc | 720 |
| Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser | |
| 225 230 235 240 | |
| gga ctc aga tct cga gct caa gct tcc atg agc gag acg gtc atc atg | 768 |
| Gly Leu Arg Ser Arg Ala Gln Ala Ser Met Ser Glu Thr Val Ile Met | |
| 245 250 255 | |
| agc gag acg gtc atc tgt tcc agc cgg gcc act gtg atg ctt tat gat | 816 |
| Ser Glu Thr Val Ile Cys Ser Ser Arg Ala Thr Val Met Leu Tyr Asp | |
| 260 265 270 | |
| gat ggc aac aag cga tgg ctc cct gct ggc acg ggt ccc cag gcc ttc | 864 |
| Asp Gly Asn Lys Arg Trp Leu Pro Ala Gly Thr Gly Pro Gln Ala Phe | |
| 275 280 285 | |
| agc cgc gtc cag atc tac cac aac ccc acg gcc aat tcc ttt cgc gtc | 912 |
| Ser Arg Val Gln Ile Tyr His Asn Pro Thr Ala Asn Ser Phe Arg Val | |
| 290 295 300 | |
| gtg ggc cgg aag atg cag ccc gac cag cag gtg gtc atc aac tgt gcc | 960 |
| Val Gly Arg Lys Met Gln Pro Asp Gln Gln Val Val Ile Asn Cys Ala | |
| 305 310 315 320 | |
| atc gtc cgg ggt gtc aag tat aac cag gcc acc ccc aac ttc cat cag | 1008 |
| Ile Val Arg Gly Val Lys Tyr Asn Gln Ala Thr Pro Asn Phe His Gln | |
| 325 330 335 | |
| tgg cgc gac gct cgc cag gtc tgg ggc ctc aac ttc ggc agc aag gag | 1056 |
| Trp Arg Asp Ala Arg Gln Val Trp Gly Leu Asn Phe Gly Ser Lys Glu | |
| 340 345 350 | |
| gat gcg gcc cag ttt gcc gcc ggc atg gcc agt gcc cta gag gcg ttg | 1104 |
| Asp Ala Ala Gln Phe Ala Ala Gly Met Ala Ser Ala Leu Glu Ala Leu | |
| 355 360 365 | |
| gaa gga ggt ggg ccc cct cca ccc cca gca ctt ccc acc tgg tcg gtc | 1152 |
| Glu Gly Gly Gly Pro Pro Pro Pro Pro Ala Leu Pro Thr Trp Ser Val | |
| 370 375 380 | |
| ccg aac ggc ccc tcc ccg gag gag gtg gag cag cag aaa agg cag cag | 1200 |
| Pro Asn Gly Pro Ser Pro Glu Glu Val Glu Gln Lys Arg Gln Gln | |
| 385 390 395 400 | |
| ccc ggc ccg tcg gag cac ata gag cgc cgg gtc tcc aat gca gga ggc | 1248 |
| Pro Gly Pro Ser Glu His Ile Glu Arg Arg Val Ser Asn Ala Gly Gly | |
| 405 410 415 | |
| cca cct gct ccc ccc gct ggg ggt cca ccc cca cca cca gga cct ccc | 1296 |
| Pro Pro Ala Pro Pro Ala Gly Gly Pro Pro Pro Pro Pro Gly Pro Pro | |
| 420 425 430 | |

| | |
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| cct cct cca ggt ccc ccc cca ccc cca ggt ttg ccc cct tcg ggg gtc | 1344 |
| Pro Pro Pro Gly Pro Pro Pro Pro Gly Leu Pro Pro Ser Gly Val | |
| 435 440 445 | |
| cca gct gca gcg cac gga gca ggg gga gga cca ccc cct gca ccc cct | 1392 |
| Pro Ala Ala Ala His Gly Ala Gly Gly Gly Pro Pro Pro Ala Pro Pro | |
| 450 455 460 | |
| ctc ccg gca gca cag ggc cct ggt ggt ggg gga gct ggg gcc cca ggc | 1440 |
| Leu Pro Ala Ala Gln Gly Pro Gly Gly Gly Gly Ala Gly Ala Pro Gly | |
| 465 470 475 480 | |
| ctg gcc gca gct att gct gga gcc aaa ctc agg aaa gtc agc aag cag | 1488 |
| Leu Ala Ala Ala Ile Ala Gly Ala Lys Leu Arg Lys Val Ser Lys Gln | |
| 485 490 495 | |
| gag gag gcc tca ggg ggg ccc aca gcc ccc aaa gct gag agt ggt cga | 1536 |
| Glu Glu Ala Ser Gly Gly Pro Thr Ala Pro Lys Ala Glu Ser Gly Arg | |
| 500 505 510 | |
| agc gga ggt ggg gga ctc atg gaa gag atg aac gcc atg ctg gcc cgg | 1584 |
| Ser Gly Gly Gly Gly Leu Met Glu Glu Met Asn Ala Met Leu Ala Arg | |
| 515 520 525 | |
| aga agg aaa gcc acg caa gtt ggg gag aaa acc ccc aag gat gaa tct | 1632 |
| Arg Arg Lys Ala Thr Gln Val Gly Glu Lys Thr Pro Lys Asp Glu Ser | |
| 530 535 540 | |
| gcc aat cag gag gag cca gag gcc aga gtc ccg gcc cag agt gaa tct | 1680 |
| Ala Asn Gln Glu Glu Pro Glu Ala Arg Val Pro Ala Gln Ser Glu Ser | |
| 545 550 555 560 | |
| gtg cgg aga ccc tgg gag aag aac agc aca acc ttg cca agg atg aag | 1728 |
| Val Arg Arg Pro Trp Glu Lys Asn Ser Thr Thr Leu Pro Arg Met Lys | |
| 565 570 575 | |
| tcg tct tct tcg gtg acc act tcc gag acc caa ccc tgc acg ccc agc | 1776 |
| Ser Ser Ser Ser Val Thr Thr Ser Glu Thr Gln Pro Cys Thr Pro Ser | |
| 580 585 590 | |
| tcc agt gat tac tcg gac cta cag agg gtg aaa cag gag ctt ctg gaa | 1824 |
| Ser Ser Asp Tyr Ser Asp Leu Gln Arg Val Lys Gln Glu Leu Leu Glu | |
| 595 600 605 | |
| gag gtg aag aag gaa ttg cag aaa gtg aaa gag gaa atc att gaa gcc | 1872 |
| Glu Val Lys Lys Glu Leu Gln Lys Val Lys Glu Glu Ile Ile Glu Ala | |
| 610 615 620 | |
| ttc gtc cag gag ctg agg aag cgg ggt tct ccc tga | 1908 |
| Phe Val Gln Glu Leu Arg Lys Arg Gly Ser Pro | |
| 625 630 635 | |

<210> 125

<211> 635

<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-VASP fusion

<400> 125

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| Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly | |
| 20 25 30 | |
| Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile | |
| 35 40 45 | |
| Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr | |

| | | | | | | | | | | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--|
| | 50 | | | | | 55 | | | | | 60 | | | | | |
| Leu 65 | Thr | Tyr | Gly | Val | Gln 70 | Cys | Phe | Ser | Arg | Tyr 75 | Pro | Asp | His | Met | Lys 80 | |
| Gln | His | Asp | Phe | Phe 85 | Lys | Ser | Ala | Met | Pro 90 | Glu | Gly | Tyr | Val | Gln 95 | Glu | |
| Arg | Thr | Ile | Phe 100 | Phe | Lys | Asp | Asp | Gly 105 | Asn | Tyr | Lys | Thr | Arg 110 | Ala | Glu | |
| Val | Lys | Phe 115 | Glu | Gly | Asp | Thr | Leu 120 | Val | Asn | Arg | Ile | Glu 125 | Leu | Lys | Gly | |
| Ile | Asp 130 | Phe | Lys | Glu | Asp | Gly 135 | Asn | Ile | Leu | Gly | His 140 | Lys | Leu | Glu | Tyr | |
| Asn 145 | Tyr | Asn | Ser | His | Asn 150 | Val | Tyr | Ile | Met | Ala 155 | Asp | Lys | Gln | Lys | Asn 160 | |
| Gly | Ile | Lys | Val | Asn 165 | Phe | Lys | Ile | Arg | His 170 | Asn | Ile | Glu | Asp | Gly 175 | Ser | |
| Val | Gln | Leu | Ala 180 | Asp | His | Tyr | Gln | Gln 185 | Asn | Thr | Pro | Ile | Gly 190 | Asp | Gly | |
| Pro | Val | Leu 195 | Leu | Pro | Asp | Asn | His 200 | Tyr | Leu | Ser | Thr | Gln 205 | Ser | Ala | Leu | |
| Ser | Lys 210 | Asp | Pro | Asn | Glu | Lys 215 | Arg | Asp | His | Met | Val 220 | Leu | Leu | Glu | Phe | |
| Val 225 | Thr | Ala | Ala | Gly | Ile 230 | Thr | Leu | Gly | Met | Asp 235 | Glu | Leu | Tyr | Lys | Ser 240 | |
| Gly | Leu | Arg | Ser | Arg 245 | Ala | Gln | Ala | Ser | Met 250 | Ser | Glu | Thr | Val | Ile 255 | Met | |
| Ser | Glu | Thr | Val 260 | Ile | Cys | Ser | Ser | Arg 265 | Ala | Thr | Val | Met | Leu 270 | Tyr | Asp | |
| Asp | Gly | Asn 275 | Lys | Arg | Trp | Leu | Pro 280 | Ala | Gly | Thr | Gly | Pro 285 | Gln | Ala | Phe | |
| Ser | Arg 290 | Val | Gln | Ile | Tyr | His 295 | Asn | Pro | Thr | Ala | Asn 300 | Ser | Phe | Arg | Val | |
| Val 305 | Gly | Arg | Lys | Met | Gln 310 | Pro | Asp | Gln | Gln | Val 315 | Val | Ile | Asn | Cys | Ala 320 | |
| Ile | Val | Arg | Gly | Val 325 | Lys | Tyr | Asn | Gln | Ala 330 | Thr | Pro | Asn | Phe | His 335 | Gln | |
| Trp | Arg | Asp | Ala 340 | Arg | Gln | Val | Trp | Gly 345 | Leu | Asn | Phe | Gly | Ser 350 | Lys | Glu | |
| Asp | Ala | Ala 355 | Gln | Phe | Ala | Ala | Gly 360 | Met | Ala | Ser | Ala | Leu 365 | Glu | Ala | Leu | |
| Glu | Gly 370 | Gly | Gly | Pro | Pro | Pro 375 | Pro | Pro | Ala | Leu | Pro 380 | Thr | Trp | Ser | Val | |
| Pro 385 | Asn | Gly | Pro | Ser | Pro 390 | Glu | Glu | Val | Glu | Gln 395 | Gln | Lys | Arg | Gln | Gln 400 | |
| Pro | Gly | Pro | Ser | Glu 405 | His | Ile | Glu | Arg | Val 410 | Ser | Asn | Ala | Gly 415 | Gly | Gly | |
| Pro | Pro | Ala | Pro 420 | Pro | Ala | Gly | Gly | Pro 425 | Pro | Pro | Pro | Pro | Gly 430 | Pro | Pro | |
| Pro | Pro | Pro 435 | Gly | Pro | Pro | Pro | Pro 440 | Pro | Gly | Leu | Pro | Pro 445 | Ser | Gly | Val | |
| Pro | Ala 450 | Ala | Ala | His | Gly | Ala 455 | Gly | Gly | Gly | Pro 460 | Pro | Ala | Pro | Pro | Pro | |
| Leu 465 | Pro | Ala | Ala | Gln 470 | Gly | Pro | Gly | Gly | Gly 475 | Gly | Ala | Gly | Ala | Pro | Gly 480 | |
| Leu | Ala | Ala | Ala 485 | Ile | Ala | Gly | Ala | Lys | Leu 490 | Arg | Lys | Val | Ser | Lys 495 | Gln | |
| Glu | Glu | Ala | Ser 500 | Gly | Gly | Pro | Thr | Ala 505 | Pro | Lys | Ala | Glu | Ser 510 | Gly | Arg | |
| Ser | Gly | Gly 515 | Gly | Gly | Leu | Met | Glu 520 | Glu | Met | Asn | Ala | Met | Leu 525 | Ala | Arg | |
| Arg | Arg 530 | Lys | Ala | Thr | Gln | Val 535 | Gly | Glu | Lys | Thr | Pro 540 | Lys | Asp | Glu | Ser | |
| Ala | Asn | Gln | Glu | Glu | Pro 550 | Glu | Ala | Arg | Val | Pro 555 | Ala | Gln | Ser | Glu | Ser 560 | |

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| <211> | 1329 |
| <212> | DNA |
| <213> | Artificial Sequence |

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| atg | gtg | agc | aag | ggc | gag | gag | ctg | ttc | acc | ggg | gtg | gtg | ccc | atc | ctg | 48 | |
| Met | Val | Ser | Lys | Gly | Glu | Glu | Leu | Phe | Thr | Gly | Val | Val | Pro | Ile | Leu | | |
| 1 | | | 5 | | | | | 10 | | | | | 15 | | | | |
| gtc | gag | ctg | gac | ggc | gac | gta | aac | ggc | cac | aag | ttc | agc | gtg | tcc | ggc | 96 | |
| Val | Glu | Leu | Asp | Gly | Asp | Val | Asn | Gly | His | Lys | Phe | Ser | Val | Ser | Gly | | |
| | | | 20 | | | | | 25 | | | | | 30 | | | | |
| gag | ggc | gag | ggc | gat | gcc | acc | tac | ggc | aag | ctg | acc | ctg | aag | ttc | atc | 144 | |
| Glu | Gly | Glu | Gly | Asp | Ala | Thr | Tyr | Gly | Lys | Leu | Thr | Leu | Lys | Phe | Ile | | |
| | | | 35 | | | | 40 | | | | | 45 | | | | | |
| tgc | acc | acc | ggc | aag | ctg | ccc | gtg | ccc | tgg | ccc | acc | ctc | gtg | acc | acc | 192 | |
| Cys | Thr | Thr | Gly | Lys | Leu | Pro | Val | Pro | Trp | Pro | Thr | Leu | Val | Thr | Thr | | |
| | 50 | | | | | 55 | | | | | 60 | | | | | | |
| ctg | acc | tac | ggc | gtg | cag | tgc | ttc | agc | cgc | tac | ccc | gac | cac | atg | aag | 240 | |
| Leu | Thr | Tyr | Gly | Val | Gln | Cys | Phe | Ser | Arg | Tyr | Pro | Asp | His | Met | Lys | | |
| | 65 | | | 70 | | | | | | 75 | | | | | 80 | | |
| cag | cac | gac | ttc | ttc | aag | tcc | gcc | atg | ccc | gaa | ggc | tac | gtc | cag | gag | 288 | |
| Gln | His | Asp | Phe | Phe | Lys | Ser | Ala | Met | Pro | Glu | Gly | Tyr | Val | Gln | Glu | | |
| | | | | 85 | | | | | 90 | | | | | 95 | | | |
| cgc | acc | atc | ttc | ttc | aag | gac | gac | ggc | aac | tac | aag | acc | cgc | gcc | gag | 336 | |
| Arg | Thr | Ile | Phe | Phe | Lys | Asp | Asp | Gly | Asn | Tyr | Lys | Thr | Arg | Ala | Glu | | |
| | | | 100 | | | | | 105 | | | | | 110 | | | | |
| gtg | aag | ttc | gag | ggc | gac | acc | ctg | gtg | aac | cgc | atc | gag | ctg | aag | ggc | 384 | |
| Val | Lys | Phe | Glu | Gly | Asp | Thr | Leu | Val | Asn | Arg | Ile | Glu | Leu | Lys | Gly | | |
| | | | 115 | | | | 120 | | | | | 125 | | | | | |
| atc | gac | ttc | aag | gag | gac | ggc | aac | atc | ctg | ggg | cac | aag | ctg | gag | tac | 432 | |
| Ile | Asp | Phe | Lys | Glu | Asp | Gly | Asn | Ile | Leu | Gly | His | Lys | Leu | Glu | Tyr | | |
| | | | 130 | | | 135 | | | | | 140 | | | | | | |
| aac | tac | aac | agc | cac | aac | gtc | tat | atc | atg | gcc | gac | aag | cag | aag | aac | 480 | |

| | |
|---|------|
| Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn | |
| 145 150 155 160 | |
| ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc | 528 |
| Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser | |
| 165 170 175 | |
| gtg cag ctg gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc | 576 |
| Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly | |
| 180 185 190 | |
| ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg | 624 |
| Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu | |
| 195 200 205 | |
| agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc | 672 |
| Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe | |
| 210 215 220 | |
| gtg acc gcc gcc ggg atc act ctg ggc atg gac gag ctg tac aag tcc | 720 |
| Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser | |
| 225 230 235 240 | |
| gga ctg aga tct cga gct caa gct tca atg gct gcc atc cgg aag aaa | 768 |
| Gly Leu Arg Ser Arg Ala Gln Ala Ser Met Ala Ala Ile Arg Lys Lys | |
| 245 250 255 | |
| ctg gtg att gtt ggt gat gga gcc tgt gga aag aca tgc ttg ctg ata | 816 |
| Leu Val Ile Val Gly Asp Gly Ala Cys Gly Lys Thr Cys Leu Leu Ile | |
| 260 265 270 | |
| gtc ttc agc aag gac cag ttc cca gag gtg tat gtg ccc aca gtg ttt | 864 |
| Val Phe Ser Lys Asp Gln Phe Pro Glu Val Tyr Val Thr Val Phe | |
| 275 280 285 | |
| gag aac tat gtg gca gat atc gag gtg gat gga aag cag gta gag ttg | 912 |
| Glu Asn Tyr Val Ala Asp Ile Glu Val Asp Gly Lys Gln Val Glu Leu | |
| 290 295 300 | |
| gct ttg tgg gac aca gct ggg cag gaa gat tat gat cgc ctg agg ccc | 960 |
| Ala Leu Trp Asp Thr Ala Gly Gln Glu Asp Tyr Asp Arg Leu Arg Pro | |
| 305 310 315 320 | |
| ctc tcc tac cca gat acc gat gtt ata ctg atg tgt ttt tcc atc gac | 1008 |
| Leu Ser Tyr Pro Asp Thr Asp Val Ile Leu Met Cys Phe Ser Ile Asp | |
| 325 330 335 | |
| agc cct gat agt tta gaa aac atc cca gaa aag tgg acc cca gaa gtc | 1056 |
| Ser Pro Asp Ser Leu Glu Asn Ile Pro Glu Lys Trp Thr Pro Glu Val | |
| 340 345 350 | |
| aag cat ttc tgt ccc aac gtg ccc atc atc ctg gtt ggg aat aag aag | 1104 |
| Lys His Phe Cys Pro Asn Val Pro Ile Ile Leu Val Gly Asn Lys Lys | |
| 355 360 365 | |
| gat ctt cgg aat gat gag cac aca agg cgg gag cta gcc aag atg aag | 1152 |
| Asp Leu Arg Asn Asp Glu His Thr Arg Arg Glu Leu Ala Lys Met Lys | |
| 370 375 380 | |
| cag gag ccg gtg aaa cct gaa gaa ggc aga gat atg gca aac agg att | 1200 |
| Gln Glu Pro Val Lys Pro Glu Glu Gly Arg Asp Met Ala Asn Arg Ile | |
| 385 390 395 400 | |
| ggc gct ttt ggg tac atg gag tgt tca gca aag acc aaa gat gga gtg | 1248 |
| Gly Ala Phe Gly Tyr Met Glu Cys Ser Ala Lys Thr Lys Asp Gly Val | |
| 405 410 415 | |
| aga gag gtt ttt gaa atg gct acg aga gct gct ctg caa gct aga cgt | 1296 |
| Arg Glu Val Phe Glu Met Ala Thr Arg Ala Ala Leu Gln Ala Arg Arg | |
| 420 425 430 | |
| ggg aag aaa aaa tct ggt tgc ctt gtc ttg tga | 1329 |
| Gly Lys Lys Lys Ser Gly Cys Leu Val Leu | |
| 435 440 | |

<210> 127

<211> 442

<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-RhoA fusion

<400> 127

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Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
35     40     45
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
50     55     60
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65     70     75     80
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
85     90     95
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
100    105    110
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
115    120    125
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
130    135    140
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145    150    155    160
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
165    170    175
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
180    185    190
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
195    200    205
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
210    215    220
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225    230    235    240
Gly Leu Arg Ser Arg Ala Gln Ala Ser Met Ala Ala Ile Arg Lys Lys
245    250    255
Leu Val Ile Val Gly Asp Gly Ala Cys Gly Lys Thr Cys Leu Leu Ile
260    265    270
Val Phe Ser Lys Asp Gln Phe Pro Glu Val Tyr Val Pro Thr Val Phe
275    280    285
Glu Asn Tyr Val Ala Asp Ile Glu Val Asp Gly Lys Gln Val Glu Leu
290    295    300
Ala Leu Trp Asp Thr Ala Gly Gln Glu Asp Tyr Asp Arg Leu Arg Pro
305    310    315    320
Leu Ser Tyr Pro Asp Thr Asp Val Ile Leu Met Cys Phe Ser Ile Asp
325    330    335
Ser Pro Asp Ser Leu Glu Asn Ile Pro Glu Lys Trp Thr Pro Glu Val
340    345    350
Lys His Phe Cys Pro Asn Val Pro Ile Ile Leu Val Gly Asn Lys Lys
355    360    365
Asp Leu Arg Asn Asp Glu His Thr Arg Arg Glu Leu Ala Lys Met Lys
370    375    380
Gln Glu Pro Val Lys Pro Glu Glu Gly Arg Asp Met Ala Asn Arg Ile
385    390    395    400
Gly Ala Phe Gly Tyr Met Glu Cys Ser Ala Lys Thr Lys Asp Gly Val
405    410    415
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Arg Glu Val Phe Glu Met Ala Thr Arg Ala Ala Leu Gln Ala Arg Arg
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Gly Lys Lys Lys Ser Gly Cys Leu Val Leu
435 440

<210> 128

<211> 1140

<212> DNA

<213> Artificial Sequence

<220>

<223> actin-binding-domain-EGFP fusion

<220>

<221> CDS

<222> (1)..(1137)

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gag gac tgg gac cgg gac ctg ctc ctg gac ccg gcc tgg gag aag cag 96
Glu Asp Trp Asp Arg Asp Leu Leu Leu Asp Pro Ala Trp Glu Lys Gln
20 25 30
cag aga aag aca ttc acg gca tgg tgt aac tcc cac ctc cgg aag gcg 144
Gln Arg Lys Thr Phe Thr Ala Trp Cys Asn Ser His Leu Arg Lys Ala
35 40 45
ggg aca cag atc gag aac atc gaa gag gac ttc cgg gat ggc ctg aag 192
Gly Thr Gln Ile Glu Asn Ile Glu Glu Asp Phe Arg Asp Gly Leu Lys
50 55 60
ctc atg ctg ctg ctg gag gtc atc tca ggt gaa cgc ttg gcc aag cca 240
Leu Met Leu Leu Leu Glu Val Ile Ser Gly Glu Arg Leu Ala Lys Pro
65 70 75 80
gag cga ggc aag atg aga gtg cac aag atc tcc aac gtc aac aag gcc 288
Glu Arg Gly Lys Met Arg Val His Lys Ile Ser Asn Val Asn Lys Ala
85 90 95
ctg gat ttc ata gcc agc aaa ggc gtc aaa ctg gtg tcc atc gga gcc 336
Leu Asp Phe Ile Ala Ser Lys Gly Val Lys Leu Val Ser Ile Gly Ala
100 105 110
gaa gaa atc gtg gat ggg aat gtg aag atg acc ctg ggc atg atc tgg 384
Glu Glu Ile Val Asp Gly Asn Val Lys Met Thr Leu Gly Met Ile Trp
115 120 125
acc atc atc ctg cgc agg gat cca ccg gtc gcc acc atg gtg agc aag 432
Thr Ile Ile Leu Arg Arg Asp Pro Pro Val Ala Thr Met Val Ser Lys
130 135 140
ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg gtc gag ctg gac 480
Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu Leu Asp
145 150 155 160
ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc gag ggc gag ggc 528
Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly Glu Gly
165 170 175
gat gcc acc tac ggc aag ctg acc ctg aag ttc atc tgc acc acc ggc 576

| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|--|
| Asp | Ala | Thr | Tyr | Gly | Lys | Leu | Thr | Leu | Lys | Phe | Ile | Cys | Thr | Thr | Gly | | |
| | | | 180 | | | | | 185 | | | | | 190 | | | | |
| aag | ctg | ccc | gtg | ccc | tgg | ccc | acc | ctc | gtg | acc | acc | ctg | acc | tac | ggc | 624 | |
| Lys | Leu | Pro | Val | Pro | Trp | Pro | Thr | Leu | Val | Thr | Thr | Leu | Thr | Tyr | Gly | | |
| | | 195 | | | | | 200 | | | | | 205 | | | | | |
| gtg | cag | tgc | ttc | agc | cgc | tac | ccc | gac | cac | atg | aag | cag | cac | gac | ttc | 672 | |
| Val | Gln | Cys | Phe | Ser | Arg | Tyr | Pro | Asp | His | Met | Lys | Gln | His | Asp | Phe | | |
| | 210 | | | | | 215 | | | | | 220 | | | | | | |
| ttc | aag | tcc | gcc | atg | ccc | gaa | ggc | tac | gtc | cag | gag | cgc | acc | atc | ttc | 720 | |
| Phe | Lys | Ser | Ala | Met | Pro | Glu | Gly | Tyr | Val | Gln | Glu | Arg | Thr | Ile | Phe | | |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 | | |
| ttc | aag | gac | gac | ggc | aac | tac | aag | acc | cgc | gcc | gag | gtg | aag | ttc | gag | 768 | |
| Phe | Lys | Asp | Asp | Gly | Asn | Tyr | Lys | Thr | Arg | Ala | Glu | Val | Lys | Phe | Glu | | |
| | | | | 245 | | | | | 250 | | | | | 255 | | | |
| ggc | gac | acc | ctg | gtg | aac | cgc | atc | gag | ctg | aag | ggc | atc | gac | ttc | aag | 816 | |
| Gly | Asp | Thr | Leu | Val | Asn | Arg | Ile | Glu | Leu | Lys | Gly | Ile | Asp | Phe | Lys | | |
| | | | 260 | | | | | 265 | | | | | 270 | | | | |
| gag | gac | ggc | aac | atc | ctg | ggg | cac | aag | ctg | gag | tac | aac | tac | aac | agc | 864 | |
| Glu | Asp | Gly | Asn | Ile | Leu | Gly | His | Lys | Leu | Glu | Tyr | Asn | Tyr | Asn | Ser | | |
| | | 275 | | | | | 280 | | | | | 285 | | | | | |
| cac | aac | gtc | tat | atc | atg | gcc | gac | aag | cag | aag | aac | ggc | atc | aag | gtg | 912 | |
| His | Asn | Val | Tyr | Ile | Met | Ala | Asp | Lys | Gln | Lys | Asn | Gly | Ile | Lys | Val | | |
| | 290 | | | | | 295 | | | | | | 300 | | | | | |
| aac | ttc | aag | atc | cgc | cac | aac | atc | gag | gac | ggc | agc | gtg | cag | ctc | gcc | 960 | |
| Asn | Phe | Lys | Ile | Arg | His | Asn | Ile | Glu | Asp | Gly | Ser | Val | Gln | Leu | Ala | | |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 | | |
| gac | cac | tac | cag | cag | aac | acc | ccc | atc | ggc | gac | ggc | ccc | gtg | ctg | ctg | 1008 | |
| Asp | His | Tyr | Gln | Gln | Asn | Thr | Pro | Ile | Gly | Asp | Gly | Pro | Val | Leu | Leu | | |
| | | | | 325 | | | | | 330 | | | | | 335 | | | |
| ccc | gac | aac | cac | tac | ctg | agc | acc | cag | tcc | gcc | ctg | agc | aaa | gac | ccc | 1056 | |
| Pro | Asp | Asn | His | Tyr | Leu | Ser | Thr | Gln | Ser | Ala | Leu | Ser | Lys | Asp | Pro | | |
| | | | 340 | | | | | 345 | | | | | 350 | | | | |
| aac | gag | aag | cgc | gat | cac | atg | gtc | ctg | ctg | gag | ttc | gtg | acc | gcc | gcc | 1104 | |
| Asn | Glu | Lys | Arg | Asp | His | Met | Val | Leu | Leu | Glu | Phe | Val | Thr | Ala | Ala | | |
| | | 355 | | | | | 360 | | | | | 365 | | | | | |
| ggg | atc | act | ctc | ggc | atg | gac | gag | ctg | tac | aag | taa | | | | | 1140 | |
| Gly | Ile | Thr | Leu | Gly | Met | Asp | Glu | Leu | Tyr | Lys | | | | | | | |
| | 370 | | | | | 375 | | | | | | | | | | | |

<210> 129

<211> 379

<212> PRT

<213> Artificial Sequence

<220>

<223> actin-binding-domain-EGFP fusion

<400> 129

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Met | Asp | His | Tyr | Asp | Ser | Gln | Gln | Thr | Asn | Asp | Tyr | Met | Gln | Pro | Glu | |
| 1 | | | | 5 | | | | | 10 | | | | 15 | | | |
| Glu | Asp | Trp | Asp | Arg | Asp | Leu | Leu | Leu | Asp | Pro | Ala | Trp | Glu | Lys | Gln | |
| | | 20 | | | | | | 25 | | | | | 30 | | | |
| Gln | Arg | Lys | Thr | Phe | Thr | Ala | Trp | Cys | Asn | Ser | His | Leu | Arg | Lys | Ala | |
| | | 35 | | | | 40 | | | | | 45 | | | | | |
| Gly | Thr | Gln | Ile | Glu | Asn | Ile | Glu | Glu | Asp | Phe | Arg | Asp | Gly | Leu | Lys | |
| | 50 | | | | | 55 | | | | | 60 | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Met | Leu | Leu | Leu | Glu | Val | Ile | Ser | Gly | Glu | Arg | Leu | Ala | Lys | Pro |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 |
| Glu | Arg | Gly | Lys | Met | Arg | Val | His | Lys | Ile | Ser | Asn | Val | Asn | Lys | Ala |
| | | | | 85 | | | | | 90 | | | | | 95 | |
| Leu | Asp | Phe | Ile | Ala | Ser | Lys | Gly | Val | Lys | Leu | Val | Ser | Ile | Gly | Ala |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Glu | Glu | Ile | Val | Asp | Gly | Asn | Val | Lys | Met | Thr | Leu | Gly | Met | Ile | Trp |
| | | 115 | | | | | 120 | | | | | 125 | | | |
| Thr | Ile | Ile | Leu | Arg | Arg | Asp | Pro | Pro | Val | Ala | Thr | Met | Val | Ser | Lys |
| | 130 | | | | | 135 | | | | | | 140 | | | |
| Gly | Glu | Glu | Leu | Phe | Thr | Gly | Val | Val | Pro | Ile | Leu | Val | Glu | Leu | Asp |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 |
| Gly | Asp | Val | Asn | Gly | His | Lys | Phe | Ser | Val | Ser | Gly | Glu | Gly | Glu | Gly |
| | | | 165 | | | | | 170 | | | | | | 175 | |
| Asp | Ala | Thr | Tyr | Gly | Lys | Leu | Thr | Leu | Lys | Phe | Ile | Cys | Thr | Thr | Gly |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Lys | Leu | Pro | Val | Pro | Trp | Pro | Thr | Leu | Val | Thr | Thr | Leu | Thr | Tyr | Gly |
| | | 195 | | | | 200 | | | | | | 205 | | | |
| Val | Gln | Cys | Phe | Ser | Arg | Tyr | Pro | Asp | His | Met | Lys | Gln | His | Asp | Phe |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Phe | Lys | Ser | Ala | Met | Pro | Glu | Gly | Tyr | Val | Gln | Glu | Arg | Thr | Ile | Phe |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| Phe | Lys | Asp | Asp | Gly | Asn | Tyr | Lys | Thr | Arg | Ala | Glu | Val | Lys | Phe | Glu |
| | | | 245 | | | | | 250 | | | | | | 255 | |
| Gly | Asp | Thr | Leu | Val | Asn | Arg | Ile | Glu | Leu | Lys | Gly | Ile | Asp | Phe | Lys |
| | | | 260 | | | | | 265 | | | | | 270 | | |
| Glu | Asp | Gly | Asn | Ile | Leu | Gly | His | Lys | Leu | Glu | Tyr | Asn | Tyr | Asn | Ser |
| | | 275 | | | | | 280 | | | | | 285 | | | |
| His | Asn | Val | Tyr | Ile | Met | Ala | Asp | Lys | Gln | Lys | Asn | Gly | Ile | Lys | Val |
| | 290 | | | | | 295 | | | | | 300 | | | | |
| Asn | Phe | Lys | Ile | Arg | His | Asn | Ile | Glu | Asp | Gly | Ser | Val | Gln | Leu | Ala |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Asp | His | Tyr | Gln | Gln | Asn | Thr | Pro | Ile | Gly | Asp | Gly | Pro | Val | Leu | Leu |
| | | | 325 | | | | | | 330 | | | | | 335 | |
| Pro | Asp | Asn | His | Tyr | Leu | Ser | Thr | Gln | Ser | Ala | Leu | Ser | Lys | Asp | Pro |
| | | | 340 | | | | | 345 | | | | | 350 | | |
| Asn | Glu | Lys | Arg | Asp | His | Met | Val | Leu | Leu | Glu | Phe | Val | Thr | Ala | Ala |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Gly | Ile | Thr | Leu | Gly | Met | Asp | Glu | Leu | Tyr | Lys | | | | | |
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<210> 130

<211> 3516

<212> DNA

<213> Artificial Sequence

<220>

<223> EGFP-NFAT fusion

<220>

<221> CDS

<222> (1)..(3513)

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| Leu Ala Ser Leu Ser Gly Glu Pro Pro Gly Arg Phe Gly Glu Pro Asp | |
| 325 330 335 | |
| agg gta ggg ccg cag aag ttt ctg agc gcg gcc aag cca gca ggg gcc | 1056 |
| Arg Val Gly Pro Gln Lys Phe Leu Ser Ala Ala Lys Pro Ala Gly Ala | |
| 340 345 350 | |
| tcg ggc ctg agc cct cgg atc gag atc act ccg tcc cac gaa ctg atc | 1104 |
| Ser Gly Leu Ser Pro Arg Ile Glu Ile Thr Pro Ser His Glu Leu Ile | |
| 355 360 365 | |
| cag gca gtg ggg ccc ctc cgc atg aga gac gcg ggc ctc ctg gtg gag | 1152 |
| Gln Ala Val Gly Pro Leu Arg Met Arg Asp Ala Gly Leu Leu Val Glu | |
| 370 375 380 | |
| cag cct ccc ctg gcc ggg gtg gcc gcc agc ccg agg ttc acc ctg ccc | 1200 |
| Gln Pro Pro Leu Ala Gly Val Ala Ala Ser Pro Arg Phe Thr Leu Pro | |
| 385 390 395 400 | |
| gtg ccc ggc ttc gag ggc tac cgc gag ccg ctt tgc ttg agc ccc gct | 1248 |
| Val Pro Gly Phe Glu Gly Tyr Arg Glu Pro Leu Cys Leu Ser Pro Ala | |
| 405 410 415 | |
| agc agc ggc tcc tct gcc agc ttc att tct gac acc ttc tcc ccc tac | 1296 |
| Ser Ser Gly Ser Ser Ala Ser Phe Ile Ser Asp Thr Phe Ser Pro Tyr | |
| 420 425 430 | |
| acc tcg ccc tgc gtc tcg ccc aat aac ggc ggg ccc gac gac ctg tgt | 1344 |
| Thr Ser Pro Cys Val Ser Pro Asn Asn Gly Gly Pro Asp Asp Leu Cys | |
| 435 440 445 | |
| ccg cag ttt caa aac atc cct gct cat tat tcc ccc aga acc tcg cca | 1392 |
| Pro Gln Phe Gln Asn Ile Pro Ala His Tyr Ser Pro Arg Thr Ser Pro | |
| 450 455 460 | |
| ata atg tca cct cga acc agc ctc gcc gag gac agc tgc ctg ggc cgc | 1440 |
| Ile Met Ser Pro Arg Thr Ser Leu Ala Glu Asp Ser Cys Leu Gly Arg | |
| 465 470 475 480 | |
| cac tcg ccc gtg ccc cgt ccg gcc tcc cgc tcc tca tcg cct ggt gcc | 1488 |
| His Ser Pro Val Pro Arg Pro Ala Ser Arg Ser Ser Ser Pro Gly Ala | |
| 485 490 495 | |
| aag cgg agg cat tcg tgc gcc gag gcc ttg gtt gcc ctg ccg ccc gga | 1536 |
| Lys Arg Arg His Ser Cys Ala Glu Ala Leu Val Ala Leu Pro Pro Gly | |
| 500 505 510 | |
| gcc tca ccc cag cgc tcc cgg agc ccc tcg ccg cag ccc tca tct cac | 1584 |
| Ala Ser Pro Gln Arg Ser Arg Ser Pro Ser Pro Gln Pro Ser Ser His | |
| 515 520 525 | |
| gtg gca ccc cag gac cac ggc tcc ccg gct ggg tac ccc cct gtg gct | 1632 |
| Val Ala Pro Gln Asp His Gly Ser Pro Ala Gly Tyr Pro Pro Val Ala | |
| 530 535 540 | |
| ggc tct gcc gtg atc atg gat gcc ctg aac agc ctc gcc acg gac tcg | 1680 |
| Gly Ser Ala Val Ile Met Asp Ala Leu Asn Ser Leu Ala Thr Asp Ser | |
| 545 550 555 560 | |
| cct tgt ggg atc ccc ccc aag atg tgg aag acc agc cct gac ccc tcg | 1728 |
| Pro Cys Gly Ile Pro Pro Lys Met Trp Lys Thr Ser Pro Asp Pro Ser | |
| 565 570 575 | |
| ccg gtg tct gcc gcc cca tcc aag gcc ggc ctg cct cgc cac atc tac | 1776 |
| Pro Val Ser Ala Ala Pro Ser Lys Ala Gly Leu Pro Arg His Ile Tyr | |
| 580 585 590 | |
| ccg gcc gtg gag ttc ctg ggg ccc tgc gag cag ggc gag agg aga aac | 1824 |
| Pro Ala Val Glu Phe Leu Gly Pro Cys Glu Gln Gly Glu Arg Arg Asn | |
| 595 600 605 | |
| tcg gct cca gaa tcc atc ctg ctg gtt ccg ccc act tgg ccc aag ccg | 1872 |
| Ser Ala Pro Glu Ser Ile Leu Leu Val Pro Pro Thr Trp Pro Lys Pro | |
| 610 615 620 | |
| ctg gtg cct gcc att ccc atc tgc agc atc cca gtg act gca tcc ctc | 1920 |
| Leu Val Pro Ala Ile Pro Ile Cys Ser Ile Pro Val Thr Ala Ser Leu | |
| 625 630 635 640 | |
| cct cca ctt gag tgg ccg ctg tcc agt cag tca ggc tct tac gag ctg | 1968 |
| Pro Pro Leu Glu Trp Pro Leu Ser Ser Gln Ser Gly Ser Tyr Glu Leu | |
| 645 650 655 | |

| | |
|---|------|
| cgg atc gag gtg cag ccc aag cca cat cac cgg gcc cac tat gag aca | 2016 |
| Arg Ile Glu Val Gln Pro Lys Pro His His Arg Ala His Tyr Glu Thr | |
| 660 665 670 | |
| gaa ggc agc cga ggg gct gtc aaa gct cca act gga ggc cac cct gtg | 2064 |
| Glu Gly Ser Arg Gly Ala Val Lys Ala Pro Thr Gly Gly His Pro Val | |
| 675 680 685 | |
| gtt cag ctc cat ggc tac atg gaa aac aag cct ctg gga ctt cag atc | 2112 |
| Val Gln Leu His Gly Tyr Met Glu Asn Lys Pro Leu Gly Leu Gln Ile | |
| 690 695 700 | |
| ttc att ggg aca gct gat gag cgg atc ctt aag ccg cac gcc ttc tac | 2160 |
| Phe Ile Gly Thr Ala Asp Glu Arg Ile Leu Lys Pro His Ala Phe Tyr | |
| 705 710 715 720 | |
| cag gtg cac cga atc acg ggg aaa act gtc acc acc acc agc tat gag | 2208 |
| Gln Val His Arg Ile Thr Gly Lys Thr Val Thr Thr Thr Ser Tyr Glu | |
| 725 730 735 | |
| aag ata gtg ggc aac acc aaa gtc ctg gag atc ccc ttg gag ccc aaa | 2256 |
| Lys Ile Val Gly Asn Thr Lys Val Leu Glu Ile Pro Leu Glu Pro Lys | |
| 740 745 750 | |
| aac aac atg agg gca acc atc gac tgt gcg ggg atc ttg aag ctt aga | 2304 |
| Asn Asn Met Arg Ala Thr Ile Asp Cys Ala Gly Ile Leu Lys Leu Arg | |
| 755 760 765 | |
| aac gcc gac att gag ctg cgg aaa ggc gag acg gac att gga aga aag | 2352 |
| Asn Ala Asp Ile Glu Leu Arg Lys Gly Glu Thr Asp Ile Gly Arg Lys | |
| 770 775 780 | |
| aac acg cgg gtg aga ctg gtt ttc cga gtt cac atc cca gag tcc agt | 2400 |
| Asn Thr Arg Val Arg Leu Val Phe Arg Val His Ile Pro Glu Ser Ser | |
| 785 790 795 800 | |
| ggc aga atc gtc tct tta cag act gca tct aac ccc atc gag tgc tcc | 2448 |
| Gly Arg Ile Val Ser Leu Gln Thr Ala Ser Asn Pro Ile Glu Cys Ser | |
| 805 810 815 | |
| cag cga tct gct cac gag ctg ccc atg gtt gaa aga caa gac aca gac | 2496 |
| Gln Arg Ser Ala His Glu Leu Pro Met Val Glu Arg Gln Asp Thr Asp | |
| 820 825 830 | |
| agc tgc ctg gtc tat ggc ggc cag caa atg atc ctc acg ggg cag aac | 2544 |
| Ser Cys Leu Val Tyr Gly Gly Gln Gln Met Ile Leu Thr Gly Gln Asn | |
| 835 840 845 | |
| ttt aca tcc gag tcc aaa gtt gtg ttt act gag aag acc aca gat gga | 2592 |
| Phe Thr Ser Glu Ser Lys Val Phe Thr Glu Lys Thr Thr Asp Gly | |
| 850 855 860 | |
| cag caa att tgg gag atg gaa gcc acg gtg gat aag gac aag agc cag | 2640 |
| Gln Gln Ile Trp Glu Met Glu Ala Thr Val Asp Lys Asp Lys Ser Gln | |
| 865 870 875 880 | |
| ccc aac atg ctt ttt gtt gag atc cct gaa tat cgg aac aag cat atc | 2688 |
| Pro Asn Met Leu Phe Val Glu Ile Pro Glu Tyr Arg Asn Lys His Ile | |
| 885 890 895 | |
| cgc aca cct gta aaa gtg aac ttc tac gtc atc aat ggg aag aga aaa | 2736 |
| Arg Thr Pro Val Lys Val Asn Phe Tyr Val Ile Asn Gly Lys Arg Lys | |
| 900 905 910 | |
| cga agt cag cct cag cac ttt acc tac cac cca gtc cca gcc atc aag | 2784 |
| Arg Ser Gln Pro Gln His Phe Thr Tyr His Pro Val Pro Ala Ile Lys | |
| 915 920 925 | |
| acg gag ccc acg gat gaa tat gac ccc act ctg atc tgc agc ccc acc | 2832 |
| Thr Glu Pro Thr Asp Glu Tyr Asp Pro Thr Leu Ile Cys Ser Pro Thr | |
| 930 935 940 | |
| cat gga ggc ctg ggg agc cag cct tac tac ccc cag cac ccg atg gtg | 2880 |
| His Gly Gly Leu Gly Ser Gln Pro Tyr Tyr Pro Gln His Pro Met Val | |
| 945 950 955 960 | |
| gcc gag tcc ccc tcc tgc ctc gtg gcc acc atg gct ccc tgc cag cag | 2928 |
| Ala Glu Ser Pro Ser Cys Leu Val Ala Thr Met Ala Pro Cys Gln Gln | |
| 965 970 975 | |
| ttc cgc acg ggg ctc tca tcc cct gac gcc cgc tac cag caa cag aac | 2976 |
| Phe Arg Thr Gly Leu Ser Ser Pro Asp Ala Arg Tyr Gln Gln Asn | |
| 980 985 990 | |

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cca gcg gcc gta ctc tac cag cgg agc aag agc ctg agc ccc agc ctg 3024
Pro Ala Ala Val Leu Tyr Gln Arg Ser Lys Ser Leu Ser Pro Ser Leu
          995              1000              1005
ctg ggc tat cag cag ccg gcc ctc atg gcc gcc ccg ctg tcc ctt 3069
Leu Gly Tyr Gln Gln Pro Ala Leu Met Ala Ala Pro Leu Ser Leu
          1010              1015              1020
gcg gac gct cac cgc tct gtg ctg gtg cac gcc ggc tcc cag ggc 3114
Ala Asp Ala His Arg Ser Val Leu Val His Ala Gly Ser Gln Gly
          1025              1030              1035
cag agc tca gcc ctg ctc cac ccc tct ccg acc aac cag cag gcc 3159
Gln Ser Ser Ala Leu Leu His Pro Ser Pro Thr Asn Gln Gln Ala
          1040              1045              1050
tcg cct gtg atc cac tac tca ccc acc aac cag cag ctg cgc tgc 3204
Ser Pro Val Ile His Tyr Ser Pro Thr Asn Gln Gln Leu Arg Cys
          1055              1060              1065
gga agc cac cag gag ttc cag cac atc atg tac tgc gag aat ttc 3249
Gly Ser His Gln Glu Phe Gln His Ile Met Tyr Cys Glu Asn Phe
          1070              1075              1080
gca cca ggc acc acc aga cct ggc ccg ccc ccg gtc agt caa ggt 3294
Ala Pro Gly Thr Thr Arg Pro Gly Pro Pro Pro Val Ser Gln Gly
          1085              1090              1095
cag agg ctg agc ccg ggt tcc tac ccc aca gtc att cag cag cag 3339
Gln Arg Leu Ser Pro Gly Ser Tyr Pro Thr Val Ile Gln Gln Gln
          1100              1105              1110
aat gcc acg agc caa aga gcc gcc aaa aac gga ccc ccg gtc agt 3384
Asn Ala Thr Ser Gln Arg Ala Ala Lys Asn Gly Pro Pro Val Ser
          1115              1120              1125
gac caa aag gaa gta tta cct gcg ggg gtg acc att aaa cag gag 3429
Asp Gln Lys Glu Val Leu Pro Ala Gly Val Thr Ile Lys Gln Glu
          1130              1135              1140
cag aac ttg gac cag acc tac ttg gat gat gtt aat gaa att atc 3474
Gln Asn Leu Asp Gln Thr Tyr Leu Asp Asp Val Asn Glu Ile Ile
          1145              1150              1155
agg aag gag ttt tca gga cct cct gcc aga aat cag acg taa 3516
Arg Lys Glu Phe Ser Gly Pro Pro Ala Arg Asn Gln Thr
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<211> 1171

<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-NFAT fusion

<400> 131

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          20          25          30
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
          35          40          45
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
          50          55          60
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65          70          75          80
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu

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Pro Ala Val Glu Phe Leu Gly Pro Cys Glu Gln Gly Glu Arg Arg Asn
 595 600 605
 Ser Ala Pro Glu Ser Ile Leu Leu Val Pro Pro Thr Trp Pro Lys Pro
 610 615 620
 Leu Val Pro Ala Ile Pro Ile Cys Ser Ile Pro Val Thr Ala Ser Leu
 625 630 635 640
 Pro Pro Leu Glu Trp Pro Leu Ser Ser Gln Ser Gly Ser Tyr Glu Leu
 645 650 655
 Arg Ile Glu Val Gln Pro Lys Pro His His Arg Ala His Tyr Glu Thr
 660 665 670
 Glu Gly Ser Arg Gly Ala Val Lys Ala Pro Thr Gly Gly His Pro Val
 675 680 685
 Val Gln Leu His Gly Tyr Met Glu Asn Lys Pro Leu Gly Leu Gln Ile
 690 695 700
 Phe Ile Gly Thr Ala Asp Glu Arg Ile Leu Lys Pro His Ala Phe Tyr
 705 710 715 720
 Gln Val His Arg Ile Thr Gly Lys Thr Val Thr Thr Thr Ser Tyr Glu
 725 730 735
 Lys Ile Val Gly Asn Thr Lys Val Leu Glu Ile Pro Leu Glu Pro Lys
 740 745 750
 Asn Asn Met Arg Ala Thr Ile Asp Cys Ala Gly Ile Leu Lys Leu Arg
 755 760 765
 Asn Ala Asp Ile Glu Leu Arg Lys Gly Glu Thr Asp Ile Gly Arg Lys
 770 775 780
 Asn Thr Arg Val Arg Leu Val Phe Arg Val His Ile Pro Glu Ser Ser
 785 790 795 800
 Gly Arg Ile Val Ser Leu Gln Thr Ala Ser Asn Pro Ile Glu Cys Ser
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 Gln Arg Ser Ala His Glu Leu Pro Met Val Glu Arg Gln Asp Thr Asp
 820 825 830
 Ser Cys Leu Val Tyr Gly Gly Gln Gln Met Ile Leu Thr Gly Gln Asn
 835 840 845
 Phe Thr Ser Glu Ser Lys Val Phe Thr Glu Lys Thr Thr Asp Gly
 850 855 860
 Gln Gln Ile Trp Glu Met Glu Ala Thr Val Asp Lys Asp Lys Ser Gln
 865 870 875 880
 Pro Asn Met Leu Phe Val Glu Ile Pro Glu Tyr Arg Asn Lys His Ile
 885 890 895
 Arg Thr Pro Val Lys Val Asn Phe Tyr Val Ile Asn Gly Lys Arg Lys
 900 905 910
 Arg Ser Gln Pro Gln His Phe Thr Tyr His Pro Val Pro Ala Ile Lys
 915 920 925
 Thr Glu Pro Thr Asp Glu Tyr Asp Pro Thr Leu Ile Cys Ser Pro Thr
 930 935 940
 His Gly Gly Leu Gly Ser Gln Pro Tyr Tyr Pro Gln His Pro Met Val
 945 950 955 960
 Ala Glu Ser Pro Ser Cys Leu Val Ala Thr Met Ala Pro Cys Gln Gln
 965 970 975
 Phe Arg Thr Gly Leu Ser Ser Pro Asp Ala Arg Tyr Gln Gln Asn
 980 985 990
 Pro Ala Ala Val Leu Tyr Gln Arg Ser Lys Ser Leu Ser Pro Ser Leu
 995 1000 1005
 Leu Gly Tyr Gln Gln Pro Ala Leu Met Ala Ala Pro Leu Ser Leu
 1010 1015 1020
 Ala Asp Ala His Arg Ser Val Leu Val His Ala Gly Ser Gln Gly
 1025 1030 1035
 Gln Ser Ser Ala Leu Leu His Pro Ser Pro Thr Asn Gln Gln Ala
 1040 1045 1050
 Ser Pro Val Ile His Tyr Ser Pro Thr Asn Gln Gln Leu Arg Cys
 1055 1060 1065
 Gly Ser His Gln Glu Phe Gln His Ile Met Tyr Cys Glu Asn Phe
 1070 1075 1080
 Ala Pro Gly Thr Thr Arg Pro Gly Pro Pro Pro Val Ser Gln Gly

| | | | | | |
|------|-------------------------|------|---------------------|------|-----------------|
| 1085 | Gln Arg Leu Ser Pro Gly | 1090 | Tyr Pro Thr Val | 1095 | Ile Gln Gln Gln |
| 1100 | Asn Ala Thr Ser Gln Arg | 1105 | Ala Ala Lys Asn Gly | 1110 | Pro Pro Val Ser |
| 1115 | Asp Gln Lys Glu Val Leu | 1120 | Pro Ala Gly Val Thr | 1125 | Ile Lys Gln Glu |
| 1130 | Gln Asn Leu Asp Gln Thr | 1135 | Tyr Leu Asp Asp Val | 1140 | Asn Glu Ile Ile |
| 1145 | Arg Lys Glu Phe Ser Gly | 1150 | Pro Pro Ala Arg Asn | 1155 | Gln Thr |
| 1160 | | 1165 | | 1170 | |

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<211> 3546

<212> DNA

<213> Artificial Sequence

<220>

<223> NFAT-EGFP fusion

<220>

<221> CDS

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| Met Asn Ala Pro Glu Arg Gln Pro Gln Pro Asp Gly Gly Asp Ala Pro | | |
| 1 5 10 15 | | |
| ggc cac gag cct ggg ggc agc ccc caa gac gag ctt gac ttc tcc atc | | 96 |
| Gly His Glu Pro Gly Gly Ser Pro Gln Asp Glu Leu Asp Phe Ser Ile | | |
| 20 25 30 | | |
| ctc ttc gac tat gag tat ttg aat ccg aac gaa gaa gag ccg aat gca | | 144 |
| Leu Phe Asp Tyr Glu Tyr Leu Asn Pro Asn Glu Glu Pro Asn Ala | | |
| 35 40 45 | | |
| cat aag gtc gcc agc cca ccc tcc gga ccc gca tac ccc gat gat gta | | 192 |
| His Lys Val Ala Ser Pro Pro Ser Gly Pro Ala Tyr Pro Asp Asp Val | | |
| 50 55 60 | | |
| atg gac tat ggc ctc aag cca tac agc ccc ctt gct agt ctc tct ggc | | 240 |
| Met Asp Tyr Gly Leu Lys Pro Tyr Ser Pro Leu Ala Ser Leu Ser Gly | | |
| 65 70 75 80 | | |
| gag ccc ccc ggc cga ttc gga gag ccg gat agg gta ggg ccg cag aag | | 288 |
| Glu Pro Pro Gly Arg Phe Gly Glu Pro Asp Arg Val Gly Pro Gln Lys | | |
| 85 90 95 | | |
| ttt ctg agc gcg gcc aag cca gca ggg gcc tcg ggc ctg agc cct cgg | | 336 |
| Phe Leu Ser Ala Ala Lys Pro Ala Gly Ala Ser Gly Leu Ser Pro Arg | | |
| 100 105 110 | | |
| atc gag atc act ccg tcc cac gaa ctg atc cag gca gtg ggg ccc ctc | | 384 |
| Ile Glu Ile Thr Pro Ser His Glu Leu Ile Gln Ala Val Gly Pro Leu | | |
| 115 120 125 | | |
| cgc atg aga gac gcg ggc ctc ctg gtg gag cag cct ccc ctg gcc ggg | | 432 |
| Arg Met Arg Asp Ala Gly Leu Leu Val Glu Gln Pro Pro Leu Ala Gly | | |
| 130 135 140 | | |

| | |
|---|------|
| gtg gcc gcc agc ccg agg ttc acc ctg ccc gtg ccc ggc ttc gag ggc | 480 |
| Val Ala Ala Ser Pro Arg Phe Thr Leu Pro Val Pro Gly Phe Glu Gly | |
| 145 150 155 160 | |
| tac cgc gag ccg ctt tgc ttg agc ccc gct agc agc ggc tcc tct gcc | 528 |
| Tyr Arg Glu Pro Leu Cys Leu Ser Pro Ala Ser Ser Gly Ser Ser Ala | |
| 165 170 175 | |
| agc ttc att tct gac acc ttc tcc ccc tac acc tcg ccc tgc gtc tcg | 576 |
| Ser Phe Ile Ser Asp Thr Phe Ser Pro Tyr Thr Ser Pro Cys Val Ser | |
| 180 185 190 | |
| ccc aat aac ggc ggg ccc gac gac ctg tgt ccg cag ttt caa aac atc | 624 |
| Pro Asn Asn Gly Gly Pro Asp Asp Leu Cys Pro Gln Phe Gln Asn Ile | |
| 195 200 205 | |
| cct gct cat tat tcc ccc aga acc tcg cca ata atg tca cct cga acc | 672 |
| Pro Ala His Tyr Ser Pro Arg Thr Ser Pro Ile Met Ser Pro Arg Thr | |
| 210 215 220 | |
| agc ctc gcc gag gac agc tgc ctg ggc cgc cac tcg ccc gtg ccc cgt | 720 |
| Ser Leu Ala Glu Asp Ser Cys Leu Gly Arg His Ser Pro Val Pro Arg | |
| 225 230 235 240 | |
| ccg gcc tcc cgc tcc tca tcg cct ggt gcc aag cgg agg cat tcg tgc | 768 |
| Pro Ala Ser Arg Ser Ser Ser Pro Gly Ala Lys Arg Arg His Ser Cys | |
| 245 250 255 | |
| gcc gag gcc ttg gtt gcc ctg ccg ccc gga gcc tca ccc cag cgc tcc | 816 |
| Ala Glu Ala Leu Val Ala Leu Pro Pro Gly Ala Ser Pro Gln Arg Ser | |
| 260 265 270 | |
| cgg agc ccc tcg ccg cag ccc tca tct cac gtg gca ccc cag gac cac | 864 |
| Arg Ser Pro Ser Pro Gln Pro Ser Ser His Val Ala Pro Gln Asp His | |
| 275 280 285 | |
| ggc tcc ccg gct ggg tac ccc cct gtg gct ggc tct gcc gtg atc atg | 912 |
| Gly Ser Pro Ala Gly Tyr Pro Pro Val Ala Gly Ser Ala Val Ile Met | |
| 290 295 300 | |
| gat gcc ctg aac agc ctc gcc acg gac tcg cct tgt ggg atc ccc ccc | 960 |
| Asp Ala Leu Asn Ser Leu Ala Thr Asp Ser Pro Cys Gly Ile Pro Pro | |
| 305 310 315 320 | |
| aag atg tgg aag acc agc cct gac ccc tcg ccg gtg tct gcc gcc cca | 1008 |
| Lys Met Trp Lys Thr Ser Pro Asp Pro Ser Pro Val Ser Ala Ala Pro | |
| 325 330 335 | |
| tcc aag gcc ggc ctg cct cgc cac atc tac ccg gcc gtg gag ttc ctg | 1056 |
| Ser Lys Ala Gly Leu Pro Arg His Ile Tyr Pro Ala Val Glu Phe Leu | |
| 340 345 350 | |
| ggg ccc tgc gag cag ggc gag agg aga aac tcg gct cca gaa tcc atc | 1104 |
| Gly Pro Cys Glu Gln Gly Glu Arg Arg Asn Ser Ala Pro Glu Ser Ile | |
| 355 360 365 | |
| ctg ctg gtt ccg ccc act tgg ccc aag ccg ctg gtg cct gcc att ccc | 1152 |
| Leu Leu Val Pro Pro Thr Trp Pro Lys Pro Leu Val Pro Ala Ile Pro | |
| 370 375 380 | |
| atc tgc agc atc cca gtg act gca tcc ctc cct cca ctt gag tgg ccg | 1200 |
| Ile Cys Ser Ile Pro Val Thr Ala Ser Leu Pro Pro Leu Glu Trp Pro | |
| 385 390 395 400 | |
| ctg tcc agt cag tca ggc tct tac gag ctg cgg atc gag gtg cag ccc | 1248 |
| Leu Ser Ser Gln Ser Gly Ser Tyr Glu Leu Arg Ile Glu Val Gln Pro | |
| 405 410 415 | |
| aag cca cat cac cgg gcc cac tat gag aca gaa ggc agc cga ggg gct | 1296 |
| Lys Pro His His Arg Ala His Tyr Glu Thr Glu Gly Ser Arg Gly Ala | |
| 420 425 430 | |
| gtc aaa gct cca act gga ggc cac cct gtg gtt cag ctc cat ggc tac | 1344 |
| Val Lys Ala Pro Thr Gly Gly His Pro Val Val Gln Leu His Gly Tyr | |
| 435 440 445 | |
| atg gaa aac aag cct ctg gga ctt cag atc ttc att ggg aca gct gat | 1392 |
| Met Glu Asn Lys Pro Leu Gly Leu Gln Ile Phe Ile Gly Thr Ala Asp | |
| 450 455 460 | |
| gag cgg atc ctt aag ccg cac gcc ttc tac cag gtg cac cga atc acg | 1440 |
| Glu Arg Ile Leu Lys Pro His Ala Phe Tyr Gln Val His Arg Ile Thr | |
| 465 470 475 480 | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| ggg | aaa | act | gtc | acc | acc | acc | agc | tat | gag | aag | ata | gtg | ggc | aac | acc | 1488 |
| Gly | Lys | Thr | Val | Thr | Thr | Thr | Ser | Tyr | Glu | Lys | Ile | Val | Gly | Asn | Thr | |
| | | | | 485 | | | | | 490 | | | | | 495 | | |
| aaa | gtc | ctg | gag | atc | ccc | ttg | gag | ccc | aaa | aac | aac | atg | agg | gca | acc | 1536 |
| Lys | Val | Leu | Glu | Ile | Pro | Leu | Glu | Pro | Lys | Asn | Asn | Met | Arg | Ala | Thr | |
| | | | 500 | | | | | 505 | | | | | 510 | | | |
| atc | gac | tgt | gcg | ggg | atc | ttg | aag | ctt | aga | aac | gcc | gac | att | gag | ctg | 1584 |
| Ile | Asp | Cys | Ala | Gly | Ile | Leu | Lys | Leu | Arg | Asn | Ala | Asp | Ile | Glu | Leu | |
| | | 515 | | | | | 520 | | | | | 525 | | | | |
| cgg | aaa | ggc | gag | acg | gac | att | gga | aga | aag | aac | acg | cgg | gtg | aga | ctg | 1632 |
| Arg | Lys | Gly | Glu | Thr | Asp | Ile | Gly | Arg | Lys | Asn | Thr | Arg | Val | Arg | Leu | |
| | 530 | | | | | 535 | | | | | 540 | | | | | |
| gtt | ttc | cga | gtt | cac | atc | cca | gag | tcc | agt | ggc | aga | atc | gtc | tct | tta | 1680 |
| Val | Phe | Arg | Val | His | Ile | Pro | Glu | Ser | Ser | Gly | Arg | Ile | Val | Ser | Leu | |
| | | | | | 550 | | | | | 555 | | | | | 560 | |
| cag | act | gca | tct | aac | ccc | atc | gag | tgc | tcc | cag | cga | tct | gct | cac | gag | 1728 |
| Gln | Thr | Ala | Ser | Asn | Pro | Ile | Glu | Cys | Ser | Gln | Arg | Ser | Ala | His | Glu | |
| | | | | 565 | | | | | 570 | | | | | 575 | | |
| ctg | ccc | atg | gtt | gaa | aga | caa | gac | aca | gac | agc | tgc | ctg | gtc | tat | ggc | 1776 |
| Leu | Pro | Met | Val | Glu | Arg | Gln | Asp | Thr | Asp | Ser | Cys | Leu | Val | Tyr | Gly | |
| | | | 580 | | | | | 585 | | | | | 590 | | | |
| ggc | cag | caa | atg | atc | ctc | acg | ggg | cag | aac | ttt | aca | tcc | gag | tcc | aaa | 1824 |
| Gly | Gln | Gln | Met | Ile | Leu | Thr | Gly | Gln | Asn | Phe | Thr | Ser | Glu | Ser | Lys | |
| | | 595 | | | | | 600 | | | | | 605 | | | | |
| gtt | gtg | ttt | act | gag | aag | acc | aca | gat | gga | cag | caa | att | tgg | gag | atg | 1872 |
| Val | Val | Phe | Thr | Glu | Lys | Thr | Thr | Asp | Gly | Gln | Gln | Ile | Trp | Glu | Met | |
| | | 610 | | | | 615 | | | | | 620 | | | | | |
| gaa | gcc | acg | gtg | gat | aag | gac | aag | agc | cag | ccc | aac | atg | ctt | ttt | gtt | 1920 |
| Glu | Ala | Thr | Val | Asp | Lys | Asp | Lys | Ser | Gln | Pro | Asn | Met | Leu | Phe | Val | |
| | | | | | 630 | | | | 635 | | | | | 640 | | |
| gag | atc | cct | gaa | tat | cgg | aac | aag | cat | atc | cgc | aca | cct | gta | aaa | gtg | 1968 |
| Glu | Ile | Pro | Glu | Tyr | Arg | Asn | Lys | His | Ile | Arg | Thr | Pro | Val | Lys | Val | |
| | | | | 645 | | | | | 650 | | | | | 655 | | |
| aac | ttc | tac | gtc | atc | aat | ggg | aag | aga | aaa | cga | agt | cag | cct | cag | cac | 2016 |
| Asn | Phe | Tyr | Val | Ile | Asn | Gly | Lys | Arg | Lys | Arg | Ser | Gln | Pro | Gln | His | |
| | | | 660 | | | | | 665 | | | | | 670 | | | |
| ttt | acc | tac | cac | cca | gtc | cca | gcc | atc | aag | acg | gag | ccc | acg | gat | gaa | 2064 |
| Phe | Thr | Tyr | His | Pro | Val | Pro | Ala | Ile | Lys | Thr | Glu | Pro | Thr | Asp | Glu | |
| | | | 675 | | | | 680 | | | | | 685 | | | | |
| tat | gac | ccc | act | ctg | atc | tgc | agc | ccc | acc | cat | gga | ggc | ctg | ggg | agc | 2112 |
| Tyr | Asp | Pro | Thr | Leu | Ile | Cys | Ser | Pro | Thr | His | Gly | Gly | Leu | Gly | Ser | |
| | | 690 | | | | 695 | | | | | 700 | | | | | |
| cag | cct | tac | tac | ccc | cag | cac | ccg | atg | gtg | gcc | gag | tcc | ccc | tcc | tgc | 2160 |
| Gln | Pro | Tyr | Tyr | Pro | Gln | His | Pro | Met | Val | Ala | Glu | Ser | Pro | Ser | Cys | |
| | | | | | 710 | | | | | 715 | | | | | 720 | |
| ctc | gtg | gcc | acc | atg | gct | ccc | tgc | cag | cag | ttc | cgc | acg | ggg | ctc | tca | 2208 |
| Leu | Val | Ala | Thr | Met | Ala | Pro | Cys | Gln | Gln | Phe | Arg | Thr | Gly | Leu | Ser | |
| | | | | 725 | | | | | | 730 | | | | 735 | | |
| tcc | cct | gac | gcc | cgc | tac | cag | caa | cag | aac | cca | gcg | gcc | gta | ctc | tac | 2256 |
| Ser | Pro | Asp | Ala | Arg | Tyr | Gln | Gln | Gln | Asn | Pro | Ala | Ala | Val | Leu | Tyr | |
| | | | | 740 | | | | 745 | | | | | 750 | | | |
| cag | cgg | agc | aag | agc | ctg | agc | ccc | agc | ctg | ctg | ggc | tat | cag | cag | ccg | 2304 |
| Gln | Arg | Ser | Lys | Ser | Leu | Ser | Pro | Ser | Leu | Leu | Gly | Tyr | Gln | Gln | Pro | |
| | | | 755 | | | | 760 | | | | | 765 | | | | |
| gcc | ctc | atg | gcc | gcc | ccg | ctg | tcc | ctt | gcg | gac | gct | cac | cgc | tct | gtg | 2352 |
| Ala | Leu | Met | Ala | Ala | Pro | Leu | Ser | Leu | Ala | Asp | Ala | His | Arg | Ser | Val | |
| | | | 770 | | | | 775 | | | | 780 | | | | | |
| ctg | gtg | cac | gcc | ggc | tcc | cag | ggc | cag | agc | tca | gcc | ctg | ctc | cac | ccc | 2400 |
| Leu | Val | His | Ala | Gly | Ser | Gln | Gly | Gln | Ser | Ser | Ala | Leu | Leu | His | Pro | |
| | | | | | 790 | | | | | 795 | | | | | 800 | |
| tct | ccg | acc | aac | cag | cag | gcc | tcg | cct | gtg | atc | cac | tac | tca | ccc | acc | 2448 |
| Ser | Pro | Thr | Asn | Gln | Gln | Ala | Ser | Pro | Val | Ile | His | Tyr | Ser | Pro | Thr | |
| | | | | 805 | | | | | 810 | | | | | 815 | | |

| | |
|---|------|
| aac cag cag ctg cgc tgc gga agc cac cag gag ttc cag cac atc atg | 2496 |
| Asn Gln Gln Leu Arg Cys Gly Ser His Gln Glu Phe Gln His Ile Met | |
| 820 825 830 | |
| tac tgc gag aat ttc gca cca ggc acc acc aga cct ggc ccg ccc ccg | 2544 |
| Tyr Cys Glu Asn Phe Ala Pro Gly Thr Thr Arg Pro Gly Pro Pro Pro | |
| 835 840 845 | |
| gtc agt caa ggt cag agg ctg agc ccg ggt tcc tac ccc aca gtc att | 2592 |
| Val Ser Gln Gly Gln Arg Leu Ser Pro Gly Ser Tyr Pro Thr Val Ile | |
| 850 855 860 | |
| cag cag cag aat gcc acg agc caa aga gcc gcc aaa aac gga ccc ccg | 2640 |
| Gln Gln Gln Asn Ala Thr Ser Gln Arg Ala Ala Lys Asn Gly Pro Pro | |
| 865 870 875 880 | |
| gtc agt gac caa aag gaa gta tta cct gcg ggg gtg acc att aaa cag | 2688 |
| Val Ser Asp Gln Lys Glu Val Leu Pro Ala Gly Val Thr Ile Lys Gln | |
| 885 890 895 | |
| gag cag aac ttg gac cag acc tac ttg gat gat gtt aat gaa att atc | 2736 |
| Glu Gln Asn Leu Asp Gln Thr Tyr Leu Asp Asp Val Asn Glu Ile Ile | |
| 900 905 910 | |
| agg aag gag ttt tca gga cct cct gcc aga aat cag acg aga att ctg | 2784 |
| Arg Lys Glu Phe Ser Gly Pro Pro Ala Arg Asn Gln Thr Arg Ile Leu | |
| 915 920 925 | |
| cag tcg acg gta ccg cgg gcc cgg gat cca ccg gtc gcc acc atg gtg | 2832 |
| Gln Ser Thr Val Pro Arg Ala Arg Asp Pro Pro Val Ala Thr Met Val | |
| 930 935 940 | |
| agc aag ggc gag gag ctg acc ggg gtg gtg ccc atc ctg gtc gag | 2880 |
| Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu | |
| 945 950 955 960 | |
| ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc gag ggc | 2928 |
| Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly | |
| 965 970 975 | |
| gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc tgc acc | 2976 |
| Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr | |
| 980 985 990 | |
| acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc ctg acc | 3024 |
| Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr | |
| 995 1000 1005 | |
| tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag cag | 3069 |
| Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln | |
| 1010 1015 1020 | |
| cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag | 3114 |
| His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu | |
| 1025 1030 1035 | |
| cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc | 3159 |
| Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala | |
| 1040 1045 1050 | |
| gag gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg | 3204 |
| Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu | |
| 1055 1060 1065 | |
| aag ggc atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag | 3249 |
| Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys | |
| 1070 1075 1080 | |
| ctg gag tac aac tac aac agc cac aac gtc tat atc atg gcc gac | 3294 |
| Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp | |
| 1085 1090 1095 | |
| aag cag aag aac ggc atc aag gtg aac ttc aag atc cgc cac aac | 3339 |
| Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn | |
| 1100 1105 1110 | |
| atc gag gac ggc agc gtg cag ctc gcc gac cac tac cag cag aac | 3384 |
| Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn | |
| 1115 1120 1125 | |
| acc ccc atc ggc gac ggc ccc gtg ctg ctg ccc gac aac cac tac | 3429 |
| Thr Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr | |
| 1130 1135 1140 | |

| | |
|---|------|
| ctg agc acc cag tcc gcc ctg agc aaa gac ccc aac gag aag cgc | 3474 |
| Leu Ser Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg | |
| 1145 1150 1155 | |
| gat cac atg gtc ctg ctg gag ttc gtg acc gcc gcc ggg atc act | 3519 |
| Asp His Met Val Leu Leu Glu Phe Val Thr Ala Ala Gly Ile Thr | |
| 1160 1165 1170 | |
| ctc ggc atg gac gag ctg tac aag taa | 3546 |
| Leu Gly Met Asp Glu Leu Tyr Lys | |
| 1175 1180 | |

<210> 133

<211> 1181

<212> PRT

<213> Artificial Sequence

<220>

<223> NFAT-EGFP fusion

<400> 133

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|---|--|
| Met Asn Ala Pro Glu Arg Gln Pro Gln Pro Asp Gly Gly Asp Ala Pro | |
| 1 5 10 15 | |
| Gly His Glu Pro Gly Gly Ser Pro Gln Asp Glu Leu Asp Phe Ser Ile | |
| 20 25 30 | |
| Leu Phe Asp Tyr Glu Tyr Leu Asn Pro Asn Glu Glu Glu Pro Asn Ala | |
| 35 40 45 | |
| His Lys Val Ala Ser Pro Pro Ser Gly Pro Ala Tyr Pro Asp Asp Val | |
| 50 55 60 | |
| Met Asp Tyr Gly Leu Lys Pro Tyr Ser Pro Leu Ala Ser Leu Ser Gly | |
| 65 70 75 80 | |
| Glu Pro Pro Gly Arg Phe Gly Glu Pro Asp Arg Val Gly Pro Gln Lys | |
| 85 90 95 | |
| Phe Leu Ser Ala Ala Lys Pro Ala Gly Ala Ser Gly Leu Ser Pro Arg | |
| 100 105 110 | |
| Ile Glu Ile Thr Pro Ser His Glu Leu Ile Gln Ala Val Gly Pro Leu | |
| 115 120 125 | |
| Arg Met Arg Asp Ala Gly Leu Val Glu Gln Pro Pro Leu Ala Gly | |
| 130 135 140 | |
| Val Ala Ala Ser Pro Arg Phe Thr Leu Pro Val Pro Gly Phe Glu Gly | |
| 145 150 155 160 | |
| Tyr Arg Glu Pro Leu Cys Leu Ser Pro Ala Ser Ser Gly Ser Ser Ala | |
| 165 170 175 | |
| Ser Phe Ile Ser Asp Thr Phe Ser Pro Tyr Thr Ser Pro Cys Val Ser | |
| 180 185 190 | |
| Pro Asn Asn Gly Gly Pro Asp Asp Leu Cys Pro Gln Phe Gln Asn Ile | |
| 195 200 205 | |
| Pro Ala His Tyr Ser Pro Arg Thr Ser Pro Ile Met Ser Pro Arg Thr | |
| 210 215 220 | |
| Ser Leu Ala Glu Asp Ser Cys Leu Gly Arg His Ser Pro Val Pro Arg | |
| 225 230 235 240 | |
| Pro Ala Ser Arg Ser Ser Ser Pro Gly Ala Lys Arg Arg His Ser Cys | |
| 245 250 255 | |
| Ala Glu Ala Leu Val Ala Leu Pro Pro Gly Ala Ser Pro Gln Arg Ser | |
| 260 265 270 | |
| Arg Ser Pro Ser Pro Gln Pro Ser Ser His Val Ala Pro Gln Asp His | |
| 275 280 285 | |
| Gly Ser Pro Ala Gly Tyr Pro Pro Val Ala Gly Ser Ala Val Ile Met | |

| | | | | | | | | | | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-----|---------|--|
| | 290 | | | | | 295 | | | | | 300 | | | | | |
| Asp 305 | Ala | Leu | Asn | Ser | Leu 310 | Ala | Thr | Asp | Ser | Pro 315 | Cys | Gly | Ile | Pro | Pro 320 | |
| Lys | Met | Trp | Lys | Thr 325 | Ser | Pro | Asp | Pro | Ser 330 | Pro | Val | Ser | Ala | Ala | Pro 335 | |
| Ser | Lys | Ala | Gly 340 | Leu | Pro | Arg | His | Ile 345 | Tyr | Pro | Ala | Val | Glu 350 | Phe | Leu | |
| Gly | Pro | Cys 355 | Glu | Gln | Gly | Glu | Arg 360 | Arg | Asn | Ser | Ala | Pro | Glu 365 | Ser | Ile | |
| Leu | Leu 370 | Val | Pro | Pro | Thr | Trp 375 | Pro | Lys | Pro | Leu 380 | Val | Pro | Ala | Ile | Pro | |
| Ile 385 | Cys | Ser | Ile | Pro | Val 390 | Thr | Ala | Ser | Leu 395 | Pro | Leu | Glu | Trp | Pro | 400 | |
| Leu | Ser | Ser | Gln | Ser | Gly 405 | Ser | Tyr | Glu | Leu 410 | Arg | Ile | Glu | Val | Gln | Pro | |
| Lys | Pro | His | His 420 | Arg | Ala | His | Tyr | Glu 425 | Thr | Glu | Gly | Ser | Arg 430 | Gly | Ala | |
| Val | Lys | Ala 435 | Pro | Thr | Gly | Gly | His 440 | Pro | Val | Val | Gln | Leu 445 | His | Gly | Tyr | |
| Met | Glu 450 | Asn | Lys | Pro | Leu | Gly 455 | Leu | Gln | Ile | Phe | Ile | Gly | Thr | Ala | Asp | |
| Glu 465 | Arg | Ile | Leu | Lys | Pro | His 470 | Ala | Phe | Tyr | Gln 475 | Val | His | Arg | Ile | Thr | |
| Gly | Lys | Thr | Val | Thr 485 | Thr | Thr | Ser | Tyr | Glu 490 | Lys | Ile | Val | Gly | Asn | Thr | |
| Lys | Val | Leu | Glu | Ile 500 | Pro | Leu | Glu | Pro 505 | Lys | Asn | Asn | Met | Arg 510 | Ala | Thr | |
| Ile | Asp | Cys 515 | Ala | Gly | Ile | Leu | Lys 520 | Leu | Arg | Asn | Ala | Asp 525 | Ile | Glu | Leu | |
| Arg | Lys 530 | Gly | Glu | Thr | Asp | Ile 535 | Gly | Arg | Lys | Asn | Thr 540 | Arg | Val | Arg | Leu | |
| Val 545 | Phe | Arg | Val | His | Ile 550 | Pro | Glu | Ser | Ser | Gly 555 | Arg | Ile | Val | Ser | Leu | |
| Gln | Thr | Ala | Ser | Asn 565 | Pro | Ile | Glu | Cys | Ser 570 | Gln | Arg | Ser | Ala | His | Glu | |
| Leu | Pro | Met | Val | Glu 580 | Arg | Gln | Asp | Thr 585 | Asp | Ser | Cys | Leu | Val 590 | Tyr | Gly | |
| Gly | Gln | Gln 595 | Met | Ile | Leu | Thr | Gly 600 | Gln | Asn | Phe | Thr | Ser 605 | Glu | Ser | Lys | |
| Val | Val 610 | Phe | Thr | Glu | Lys | Thr | Thr 615 | Asp | Gly | Gln | Gln | Ile | Trp | Glu | Met | |
| Glu 625 | Ala | Thr | Val | Asp | Lys 630 | Asp | Lys | Ser | Gln | Pro 635 | Asn | Met | Leu | Phe | Val | |
| Glu | Ile | Pro | Glu | Tyr 645 | Arg | Asn | Lys | His | Ile 650 | Arg | Thr | Pro | Val | Lys | Val | |
| Asn | Phe | Tyr | Val 660 | Ile | Asn | Gly | Lys | Arg 665 | Lys | Arg | Ser | Gln | Pro 670 | Gln | His | |
| Phe | Thr | Tyr 675 | His | Pro | Val | Pro | Ala 680 | Ile | Lys | Thr | Glu | Pro 685 | Thr | Asp | Glu | |
| Tyr | Asp 690 | Pro | Thr | Leu | Ile | Cys 695 | Ser | Pro | Thr | His | Gly 700 | Gly | Leu | Gly | Ser | |
| Gln 705 | Pro | Tyr | Tyr | Pro | Gln 710 | His | Pro | Met | Val | Ala 715 | Glu | Ser | Pro | Ser | Cys | |
| Leu | Val | Ala | Thr | Met 725 | Ala | Pro | Cys | Gln | Gln 730 | Phe | Arg | Thr | Gly | Leu | Ser | |
| Ser | Pro | Asp | Ala 740 | Arg | Tyr | Gln | Gln | Gln 745 | Asn | Pro | Ala | Ala | Val 750 | Leu | Tyr | |
| Gln | Arg | Ser 755 | Lys | Ser | Leu | Ser | Pro | Ser 760 | Leu | Leu | Gly | Tyr 765 | Gln | Gln | Pro | |
| Ala | Leu 770 | Met | Ala | Ala | Pro | Leu 775 | Ser | Leu | Ala | Asp | Ala 780 | His | Arg | Ser | Val | |
| Leu 785 | Val | His | Ala | Gly | Ser 790 | Gln | Gly | Gln | Ser | Ser 795 | Ala | Leu | Leu | His | Pro | |

| | | | | | | | | | | | | | | | |
|-----|------|-----|-----|-----|-----|------|------|-----|-----|-----|------|------|------|-----|-----|
| Ser | Pro | Thr | Asn | Gln | Gln | Ala | Ser | Pro | Val | Ile | His | Tyr | Ser | Pro | Thr |
| | | | | 805 | | | | | 810 | | | | | 815 | |
| Asn | Gln | Gln | Leu | Arg | Cys | Gly | Ser | His | Gln | Glu | Phe | Gln | His | Ile | Met |
| | | | 820 | | | | | 825 | | | | | 830 | | |
| Tyr | Cys | Glu | Asn | Phe | Ala | Pro | Gly | Thr | Thr | Arg | Pro | Gly | Pro | Pro | Pro |
| | | 835 | | | | | 840 | | | | | 845 | | | |
| Val | Ser | Gln | Gly | Gln | Arg | Leu | Ser | Pro | Gly | Ser | Tyr | Pro | Thr | Val | Ile |
| | 850 | | | | | 855 | | | | | 860 | | | | |
| Gln | Gln | Gln | Asn | Ala | Thr | Ser | Gln | Arg | Ala | Ala | Lys | Asn | Gly | Pro | Pro |
| 865 | | | | | 870 | | | | | 875 | | | | | 880 |
| Val | Ser | Asp | Gln | Lys | Glu | Val | Leu | Pro | Ala | Gly | Val | Thr | Ile | Lys | Gln |
| | | | 885 | | | | | | 890 | | | | | 895 | |
| Glu | Gln | Asn | Leu | Asp | Gln | Thr | Tyr | Leu | Asp | Asp | Val | Asn | Glu | Ile | Ile |
| | | 900 | | | | | | 905 | | | | | 910 | | |
| Arg | Lys | Glu | Phe | Ser | Gly | Pro | Pro | Ala | Arg | Asn | Gln | Thr | Arg | Ile | Leu |
| | | 915 | | | | | 920 | | | | | | 925 | | |
| Gln | Ser | Thr | Val | Pro | Arg | Ala | Arg | Asp | Pro | Pro | Val | Ala | Thr | Met | Val |
| | | 930 | | | | 935 | | | | | | 940 | | | |
| Ser | Lys | Gly | Glu | Glu | Leu | Phe | Thr | Gly | Val | Val | Pro | Ile | Leu | Val | Glu |
| 945 | | | | | 950 | | | | | 955 | | | | | 960 |
| Leu | Asp | Gly | Asp | Val | Asn | Gly | His | Lys | Phe | Ser | Val | Ser | Gly | Glu | Gly |
| | | | 965 | | | | | | 970 | | | | | 975 | |
| Glu | Gly | Asp | Ala | Thr | Tyr | Gly | Lys | Leu | Thr | Leu | Lys | Phe | Ile | Cys | Thr |
| | | 980 | | | | | | 985 | | | | | 990 | | |
| Thr | Gly | Lys | Leu | Pro | Val | Pro | Trp | Pro | Thr | Leu | Val | Thr | Thr | Leu | Thr |
| | | 995 | | | | | 1000 | | | | | | 1005 | | |
| Tyr | Gly | Val | Gln | Cys | Phe | Ser | Arg | Tyr | Pro | Asp | His | Met | Lys | Gln | |
| | 1010 | | | | | 1015 | | | | | 1020 | | | | |
| His | Asp | Phe | Phe | Lys | Ser | Ala | Met | Pro | Glu | Gly | Tyr | Val | Gln | Glu | |
| | 1025 | | | | | 1030 | | | | | | 1035 | | | |
| Arg | Thr | Ile | Phe | Phe | Lys | Asp | Asp | Gly | Asn | Tyr | Lys | Thr | Arg | Ala | |
| | 1040 | | | | | 1045 | | | | | | 1050 | | | |
| Glu | Val | Lys | Phe | Glu | Gly | Asp | Thr | Leu | Val | Asn | Arg | Ile | Glu | Leu | |
| | 1055 | | | | | 1060 | | | | | | 1065 | | | |
| Lys | Gly | Ile | Asp | Phe | Lys | Glu | Asp | Gly | Asn | Ile | Leu | Gly | His | Lys | |
| | 1070 | | | | | 1075 | | | | | | 1080 | | | |
| Leu | Glu | Tyr | Asn | Tyr | Asn | Ser | His | Asn | Val | Tyr | Ile | Met | Ala | Asp | |
| | 1085 | | | | | 1090 | | | | | | 1095 | | | |
| Lys | Gln | Lys | Asn | Gly | Ile | Lys | Val | Asn | Phe | Lys | Ile | Arg | His | Asn | |
| | 1100 | | | | | 1105 | | | | | | 1110 | | | |
| Ile | Glu | Asp | Gly | Ser | Val | Gln | Leu | Ala | Asp | His | Tyr | Gln | Gln | Asn | |
| | 1115 | | | | | 1120 | | | | | | 1125 | | | |
| Thr | Pro | Ile | Gly | Asp | Gly | Pro | Val | Leu | Leu | Pro | Asp | Asn | His | Tyr | |
| | 1130 | | | | | 1135 | | | | | | 1140 | | | |
| Leu | Ser | Thr | Gln | Ser | Ala | Leu | Ser | Lys | Asp | Pro | Asn | Glu | Lys | Arg | |
| | 1145 | | | | | 1150 | | | | | | 1155 | | | |
| Asp | His | Met | Val | Leu | Leu | Glu | Phe | Val | Thr | Ala | Ala | Gly | Ile | Thr | |
| | 1160 | | | | | 1165 | | | | | | 1170 | | | |
| Leu | Gly | Met | Asp | Glu | Leu | Tyr | Lys | | | | | | | | |
| | 1175 | | | | | 1180 | | | | | | | | | |

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<211> 2802

<212> DNA

<213> Artificial Sequence

<220>

<223> EGFP-PKG fusion

<220>

<221> CDS

<222> (1)..(2799)

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gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc 96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
20 25 30
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc 144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
35 40 45
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc 192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
50 55 60
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag 240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65 70 75 80
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag 288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
85 90 95
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag 336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
100 105 110
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc 384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
115 120 125
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac 432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
130 135 140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac 480
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145 150 155 160
ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc 528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
165 170 175
gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc 576
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
180 185 190
ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg 624
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
195 200 205
agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc 672
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
210 215 220
gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc 720
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225 230 235 240
gga ctc aga tct cga ggg agc atg ggc acc ttg cgg gat tta cag tac 768
Gly Leu Arg Ser Arg Gly Ser Met Gly Thr Leu Arg Asp Leu Gln Tyr
245 250 255
gcg ctc cag gag aag atc gag gag ctg agg cag cgg gat gct ctc atc 816
Ala Leu Gln Glu Lys Ile Glu Glu Leu Arg Gln Arg Asp Ala Leu Ile

| | | | | |
|---|-----|-----|-----|------|
| | 260 | 265 | 270 | |
| gac gag ctg gag ctg gag ttg gat cag aag gac gaa ctg atc cag aag | | | | 864 |
| Asp Glu Leu Glu Leu Glu Leu Asp Gln Lys Asp Glu Leu Ile Gln Lys | | | | |
| 275 | 280 | 285 | | |
| ctg cag aac gag ctg gac aag tac cgc tcg gtg atc cga cca gcc acc | | | | 912 |
| Leu Gln Asn Glu Leu Asp Lys Tyr Arg Ser Val Ile Arg Pro Ala Thr | | | | |
| 290 | 295 | 300 | | |
| cag cag gcg cag aag cag agc gcg agc acc ttg cag ggc gag ccg cgc | | | | 960 |
| Gln Gln Ala Gln Lys Gln Ser Ala Ser Thr Leu Gln Gly Glu Pro Arg | | | | |
| 305 | 310 | 315 | 320 | |
| acc aag cgc cag gcg atc tcc gcc gag ccc acc gcc ttc gac atc cag | | | | 1008 |
| Thr Lys Arg Gln Ala Ile Ser Ala Glu Pro Thr Ala Phe Asp Ile Gln | | | | |
| 325 | 330 | 335 | | |
| gat ctc agc cat gtg acc ctg ccc ttc tac ccc aag agc cca cag tcc | | | | 1056 |
| Asp Leu Ser His Val Thr Leu Pro Phe Tyr Pro Lys Ser Pro Gln Ser | | | | |
| 340 | 345 | 350 | | |
| aag gat ctt ata aag gaa gct atc ctt gac aat gac ttt atg aag aac | | | | 1104 |
| Lys Asp Leu Ile Lys Glu Ala Ile Leu Asp Asn Asp Phe Met Lys Asn | | | | |
| 355 | 360 | 365 | | |
| ttg gag ctg tcg cag atc cag gag att gtg gat tgt atg tac ccg gtg | | | | 1152 |
| Leu Glu Leu Ser Gln Ile Gln Glu Ile Val Asp Cys Met Tyr Pro Val | | | | |
| 370 | 375 | 380 | | |
| gag tat ggc aag gac agt tgc atc atc aaa gaa gga gac gtg ggg tca | | | | 1200 |
| Glu Tyr Gly Lys Asp Ser Cys Ile Ile Lys Glu Gly Asp Val Gly Ser | | | | |
| 385 | 390 | 395 | 400 | |
| ctg gtg tat gtc atg gaa gat ggt aag gtt gaa gtt aca aaa gaa ggt | | | | 1248 |
| Leu Val Tyr Val Met Glu Asp Gly Lys Val Glu Val Thr Lys Glu Gly | | | | |
| 405 | 410 | 415 | | |
| gtg aag ttg tgt acc atg ggt cca gga aaa gtg ttt ggg gaa ttg gct | | | | 1296 |
| Val Lys Leu Cys Thr Met Gly Pro Gly Lys Val Phe Gly Glu Leu Ala | | | | |
| 420 | 425 | 430 | | |
| att ctt tac aac tgt acc cgg aca gcg acc gtc aag act ctt gta aat | | | | 1344 |
| Ile Leu Tyr Asn Cys Thr Arg Thr Ala Thr Val Lys Thr Leu Val Asn | | | | |
| 435 | 440 | 445 | | |
| gta aaa ctc tgg gcc att gat cga caa tgt ttt caa aca ata atg atg | | | | 1392 |
| Val Lys Leu Trp Ala Ile Asp Arg Gln Cys Phe Gln Thr Ile Met Met | | | | |
| 450 | 455 | 460 | | |
| agg aca gga ctc atc aag cat acc gag tat atg gaa ttt tta aaa agc | | | | 1440 |
| Arg Thr Gly Leu Ile Lys His Thr Glu Tyr Met Glu Phe Leu Lys Ser | | | | |
| 465 | 470 | 475 | 480 | |
| gtt cca aca ttc cag agc ctt cct gaa gag atc ctc agc aag ctt gct | | | | 1488 |
| Val Pro Thr Phe Gln Ser Leu Pro Glu Glu Ile Leu Ser Lys Leu Ala | | | | |
| 485 | 490 | 495 | | |
| gat gtc ctt gaa gag acc cac tat gaa aat gga gaa tat att atc agg | | | | 1536 |
| Asp Val Leu Glu Thr His Tyr Glu Asn Gly Glu Tyr Ile Ile Arg | | | | |
| 500 | 505 | 510 | | |
| caa ggt gca aga ggg gac acc ttc ttt atc atc agc aaa gga acg gta | | | | 1584 |
| Gln Gly Ala Arg Gly Asp Thr Phe Phe Ile Ile Ser Lys Gly Thr Val | | | | |
| 515 | 520 | 525 | | |
| aat gtc act cgt gaa gac tca ccg agt gaa gac cca gtc ttt ctt aga | | | | 1632 |
| Asn Val Thr Arg Glu Asp Ser Pro Ser Glu Asp Pro Val Phe Leu Arg | | | | |
| 530 | 535 | 540 | | |
| act tta gga aaa gga gac tgg ttt gga gag aaa gcc ttg cag ggg gaa | | | | 1680 |
| Thr Leu Gly Lys Gly Asp Trp Phe Gly Glu Lys Ala Leu Gln Gly Glu | | | | |
| 545 | 550 | 555 | 560 | |
| gat gtg aga aca gca aac gta att gct gca gaa gct gta acc tgc ctt | | | | 1728 |
| Asp Val Arg Thr Ala Asn Val Ile Ala Glu Ala Val Thr Cys Leu | | | | |
| 565 | 570 | 575 | | |
| gtg att gac aga gac tct ttt aaa cat ttg att gga ggg ctg gat gat | | | | 1776 |
| Val Ile Asp Arg Asp Ser Phe Lys His Leu Ile Gly Gly Leu Asp Asp | | | | |
| 580 | 585 | 590 | | |
| gtt tct aat aaa gca tat gaa gat gca gaa gct aaa gca aaa tat gaa | | | | 1824 |
| Val Ser Asn Lys Ala Tyr Glu Asp Ala Glu Ala Lys Ala Lys Tyr Glu | | | | |

| | |
|---|------|
| gct gaa gcg gct ttc ttc gcc aac ctg aag ctg tct gat ttc aac atc | 1872 |
| Ala Glu Ala Ala Phe Phe Ala Asn Leu Lys Leu Ser Asp Phe Asn Ile | |
| 610 615 620 | |
| att gat acc ctt gga gtt gga ggt ttc gga cga gta gaa ctg gtc cag | 1920 |
| Ile Asp Thr Leu Gly Val Gly Gly Phe Gly Arg Val Glu Leu Val Gln | |
| 625 630 635 | |
| ttg aaa agt gaa gaa tcc aaa acg ttt gca atg aag att ctc aag aaa | 1968 |
| Leu Lys Ser Glu Glu Ser Lys Thr Phe Ala Met Lys Ile Leu Lys Lys | |
| 645 650 655 | |
| cgt cac att gtg gac aca aga cag cag gag cac atc cgc tca gag aag | 2016 |
| Arg His Ile Val Asp Thr Arg Gln Gln Glu His Ile Arg Ser Glu Lys | |
| 660 665 670 | |
| cag atc atg cag ggg gct cat tcc gat ttc ata gtg aga ctg tac aga | 2064 |
| Gln Ile Met Gln Gly Ala His Ser Asp Phe Ile Val Arg Leu Tyr Arg | |
| 675 680 685 | |
| aca ttt aag gac agc aaa tat ttg tat atg ttg atg gaa gct tgt cta | 2112 |
| Thr Phe Lys Asp Ser Lys Tyr Leu Tyr Met Leu Met Glu Ala Cys Leu | |
| 690 695 700 | |
| ggg gga gag ctc tgg acc att ctc agg gat aga ggt tgc ttt gaa gat | 2160 |
| Gly Gly Glu Leu Trp Thr Ile Leu Arg Asp Arg Gly Ser Phe Glu Asp | |
| 705 710 715 720 | |
| tct aca acc aga ttt tac aca gca tgt gtg gta gaa gct ttt gcc tat | 2208 |
| Ser Thr Thr Arg Phe Tyr Thr Ala Cys Val Val Glu Ala Phe Ala Tyr | |
| 725 730 735 | |
| ctg cat tcc aaa gga atc att tac agg gac ctc aag cca gaa aat ctc | 2256 |
| Leu His Ser Lys Gly Ile Ile Tyr Arg Asp Leu Lys Pro Glu Asn Leu | |
| 740 745 750 | |
| atc cta gat cac cga ggt tat gcc aaa ctg gtt gat ttt ggc ttt gca | 2304 |
| Ile Leu Asp His Arg Gly Tyr Ala Lys Leu Val Asp Phe Gly Phe Ala | |
| 755 760 765 | |
| aag aaa ata gga ttt gga aag aaa aca tgg act ttt tgt ggg act cca | 2352 |
| Lys Lys Ile Gly Phe Gly Lys Lys Thr Trp Thr Phe Cys Gly Thr Pro | |
| 770 775 780 | |
| gag tat gta gcc cca gag atc atc ctg aac aaa ggc cat gac att tca | 2400 |
| Glu Tyr Val Ala Pro Glu Ile Ile Leu Asn Lys Gly His Asp Ile Ser | |
| 785 790 795 800 | |
| gcc gag tac tgg tca ctg gga atc cta atg tat gaa ctc ctg act ggc | 2448 |
| Ala Asp Tyr Trp Ser Leu Gly Ile Leu Met Tyr Glu Leu Leu Thr Gly | |
| 805 810 815 | |
| agc cca cct ttc tca ggc cca gat cct atg aaa acc tat aac atc ata | 2496 |
| Ser Pro Pro Phe Ser Gly Pro Asp Pro Met Lys Thr Tyr Asn Ile Ile | |
| 820 825 830 | |
| ttg agg ggg att gac atg ata gaa ttt cca aag aag att gcc aaa aat | 2544 |
| Leu Arg Gly Ile Asp Met Ile Glu Phe Pro Lys Lys Ile Ala Lys Asn | |
| 835 840 845 | |
| gct gct aat tta att aaa aaa cta tgc agg gac aat cca tca gaa aga | 2592 |
| Ala Ala Asn Leu Ile Lys Lys Leu Cys Arg Asp Asn Pro Ser Glu Arg | |
| 850 855 860 | |
| tta ggg aat ttg aaa aat gga gta aaa gac att caa aag cac aaa tgg | 2640 |
| Leu Gly Asn Leu Lys Asn Gly Val Lys Asp Ile Gln Lys His Lys Trp | |
| 865 870 875 880 | |
| ttt gag ggc ttt aac tgg gaa ggc tta aga aaa ggt acc ttg aca cct | 2688 |
| Phe Glu Gly Phe Asn Trp Glu Gly Leu Arg Lys Gly Thr Leu Thr Pro | |
| 885 890 895 | |
| cct ata ata cca agt gtt gca tca ccc aca gac aca agt aat ttt gac | 2736 |
| Pro Ile Ile Pro Ser Val Ala Ser Pro Thr Asp Thr Ser Asn Phe Asp | |
| 900 905 910 | |
| agt ttc cct gag gac aac gat gaa cca cca cct gat gac aac tca gga | 2784 |
| Ser Phe Pro Glu Asp Asn Asp Glu Pro Pro Pro Asp Asp Asn Ser Gly | |
| 915 920 925 | |
| tggt gat ata gac ttc taa | 2802 |
| Trp Asp Ile Asp Phe | |

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<211> 933

<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-PKG fusion

<400> 135

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Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
35     40     45
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
50     55     60
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65     70     75     80
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
85     90     95
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
100    105    110
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
115    120    125
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
130    135    140
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145    150    155    160
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
165    170    175
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
180    185    190
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
195    200    205
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
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Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225    230    235    240
Gly Leu Arg Ser Arg Gly Ser Met Gly Thr Leu Arg Asp Leu Gln Tyr
245    250    255
Ala Leu Gln Glu Lys Ile Glu Glu Leu Arg Gln Arg Asp Ala Leu Ile
260    265    270
Asp Glu Leu Glu Leu Glu Leu Asp Gln Lys Asp Glu Leu Ile Gln Lys
275    280    285
Leu Gln Asn Glu Leu Asp Lys Tyr Arg Ser Val Ile Arg Pro Ala Thr
290    295    300
Gln Gln Ala Gln Lys Gln Ser Ala Ser Thr Leu Gln Gly Glu Pro Arg
305    310    315    320
Thr Lys Arg Gln Ala Ile Ser Ala Glu Pro Thr Ala Phe Asp Ile Gln
325    330    335
Asp Leu Ser His Val Thr Leu Pro Phe Tyr Pro Lys Ser Pro Gln Ser
340    345    350
Lys Asp Leu Ile Lys Glu Ala Ile Leu Asp Asn Asp Phe Met Lys Asn

```

[illegible]

Leu Gly Asn Leu Lys Asn Gly Val Lys Asp Ile Gln Lys His Lys Trp
 865 870 875 880
 Phe Glu Gly Phe Asn Trp Glu Gly Leu Arg Lys Gly Thr Leu Thr Pro
 885 890 895
 Pro Ile Ile Pro Ser Val Ala Ser Pro Thr Asp Thr Ser Asn Phe Asp
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 Ser Phe Pro Glu Asp Asn Asp Glu Pro Pro Pro Asp Asp Asn Ser Gly
 915 920 925
 Trp Asp Ile Asp Phe
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 gag ctg agg cag cgg gat gct ctc atc gac gag ctg gag ctg gag ttg 96
 Glu Leu Arg Gln Arg Asp Ala Leu Ile Asp Glu Leu Glu Leu Glu Leu
 20 25 30
 gat cag aag gac gaa ctg atc cag aag ctg cag aac gag ctg gac aag 144
 Asp Gln Lys Asp Glu Leu Ile Gln Lys Leu Gln Asn Glu Leu Asp Lys
 35 40 45
 tac cgc tcg gtg atc cga cca gcc acc cag cag gcg cag aag cag agc 192
 Tyr Arg Ser Val Ile Arg Pro Ala Thr Gln Gln Ala Gln Lys Gln Ser
 50 55 60
 gcg agc acc ttg cag ggc gag ccg cgc acc aag cgg cag gcg atc tcc 240
 Ala Ser Thr Leu Gln Gly Glu Pro Arg Thr Lys Arg Gln Ala Ile Ser
 65 70 75 80
 gcc gag ccc acc gcc ttc gac atc cag gat ctc agc cat gtg acc ctg 288
 Ala Glu Pro Thr Ala Phe Asp Ile Gln Asp Leu Ser His Val Thr Leu
 85 90 95
 ccc ttc tac ccc aag agc cca cag tcc aag gat ctt ata aag gaa gct 336
 Pro Phe Tyr Pro Lys Ser Pro Gln Ser Lys Asp Leu Ile Lys Glu Ala
 100 105 110
 atc ctt gac aat gac ttt atg aag aac ttg gag ctg tcg cag atc cag 384
 Ile Leu Asp Asn Asp Phe Met Lys Asn Leu Glu Leu Ser Gln Ile Gln
 115 120 125
 gag att gtg gat tgt atg tac ccg gtg gag tat ggc aag gac agt tgc 432
 Glu Ile Val Asp Cys Met Tyr Pro Val Glu Tyr Gly Lys Asp Ser Cys
 130 135 140
 atc atc aaa gaa gga gac gtg ggg tca ctg gtg tat gtc atg gaa gat 480

| | | | | | | | | | | | | | | | | |
|---------|-----|-----|-----|-----|---------|-----|-----|-----|-----|---------|-----|-----|-----|-----|---------|------|
| Ile 145 | Ile | Lys | Glu | Gly | Asp 150 | Val | Gly | Ser | Leu | Val 155 | Tyr | Val | Met | Glu | Asp 160 | |
| ggt | aag | gtt | gaa | gtt | aca | aaa | gaa | ggt | gtg | aag | ttg | tgt | acc | atg | ggt | 528 |
| Gly | Lys | Val | Glu | Val | Thr | Lys | Glu | Gly | Val | Lys | Leu | Cys | Thr | Met | Gly | |
| | | | | 165 | | | | | 170 | | | | | | 175 | |
| cca | gga | aaa | gtg | ttt | ggg | gaa | ttg | gct | att | ctt | tac | aac | tgt | acc | cgg | 576 |
| Pro | Gly | Lys | Val | Phe | Gly | Glu | Leu | Ala | Ile | Leu | Tyr | Asn | Cys | Thr | Arg | |
| | | | | 180 | | | | | 185 | | | | | | 190 | |
| aca | gcg | acc | gtc | aag | act | ctt | gta | aat | gta | aaa | ctc | tgg | gcc | att | gat | 624 |
| Thr | Ala | Thr | Val | Lys | Thr | Leu | Val | Asn | Val | Lys | Leu | Trp | Ala | Ile | Asp | |
| | | | | 195 | | | | | 200 | | | | | | 205 | |
| cga | caa | tgt | ttt | caa | aca | ata | atg | atg | agg | aca | gga | ctc | atc | aag | cat | 672 |
| Arg | Gln | Cys | Phe | Gln | Thr | Ile | Met | Met | Arg | Thr | Gly | Leu | Ile | Lys | His | |
| | | | | 210 | | | | | | | | | | | 220 | |
| acc | gag | tat | atg | gaa | ttt | tta | aaa | agc | gtt | cca | aca | ttc | cag | agc | ctt | 720 |
| Thr | Glu | Tyr | Met | Glu | Phe | Leu | Lys | Ser | Val | Pro | Thr | Phe | Gln | Ser | Leu | |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 | |
| cct | gaa | gag | atc | ctc | agc | aag | ctt | gct | gat | gtc | ctt | gaa | gag | acc | cac | 768 |
| Pro | Glu | Glu | Ile | Leu | Ser | Lys | Leu | Ala | Asp | Val | Leu | Glu | Glu | Thr | His | |
| | | | | 245 | | | | | | 250 | | | | | 255 | |
| tat | gaa | aat | gga | gaa | tat | att | atc | agg | caa | ggt | gca | aga | ggg | gac | acc | 816 |
| Tyr | Glu | Asn | Gly | Glu | Tyr | Ile | Ile | Arg | Gln | Gly | Ala | Arg | Gly | Asp | Thr | |
| | | | | 260 | | | | | 265 | | | | | | 270 | |
| ttc | ttt | atc | atc | agc | aaa | gga | acg | gta | aat | gtc | act | cgt | gaa | gac | tca | 864 |
| Phe | Phe | Ile | Ile | Ser | Lys | Gly | Thr | Val | Asn | Val | Thr | Arg | Glu | Asp | Ser | |
| | | | | 275 | | | | | 280 | | | | | | 285 | |
| ccg | agt | gaa | gac | cca | gtc | ttt | ctt | aga | act | tta | gga | aaa | gga | gac | tggt | 912 |
| Pro | Ser | Glu | Asp | Pro | Val | Phe | Leu | Arg | Thr | Leu | Gly | Lys | Gly | Asp | Trp | |
| 290 | | | | | | 295 | | | | | 300 | | | | | |
| ttt | gga | gag | aaa | gcc | ttg | cag | ggg | gaa | gat | gtg | aga | aca | gca | aac | gta | 960 |
| Phe | Gly | Glu | Lys | Ala | Leu | Gln | Gly | Glu | Asp | Val | Arg | Thr | Ala | Asn | Val | |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 | |
| att | gct | gca | gaa | gct | gta | acc | tgc | ctt | gtg | att | gac | aga | gac | tct | ttt | 1008 |
| Ile | Ala | Ala | Glu | Ala | Val | Thr | Cys | Leu | Val | Ile | Asp | Arg | Asp | Ser | Phe | |
| | | | | 325 | | | | | 330 | | | | | | 335 | |
| aaa | cat | ttg | att | gga | ggg | ctg | gat | gat | gtt | tct | aat | aaa | gca | tat | gaa | 1056 |
| Lys | His | Leu | Ile | Gly | Gly | Leu | Asp | Val | Ser | Asn | Lys | Ala | Tyr | Glu | | |
| | | | | 340 | | | | | 345 | | | | | | 350 | |
| gat | gca | gaa | gct | aaa | gca | aaa | tat | gaa | gct | gaa | gcg | gct | ttc | ttc | gcc | 1104 |
| Asp | Ala | Glu | Ala | Lys | Ala | Lys | Tyr | Glu | Ala | Glu | Ala | Ala | Phe | Phe | Ala | |
| | | | | 355 | | | | | 360 | | | | | | 365 | |
| aac | ctg | aag | ctg | tct | gat | ttc | aac | atc | att | gat | acc | ctt | gga | gtt | gga | 1152 |
| Asn | Leu | Lys | Leu | Ser | Asp | Phe | Asn | Ile | Ile | Asp | Thr | Leu | Gly | Val | Gly | |
| 370 | | | | | 375 | | | | | 380 | | | | | | |
| ggt | ttc | gga | cga | gta | gaa | ctg | gtc | cag | ttg | aaa | agt | gaa | gaa | tcc | aaa | 1200 |
| Gly | Phe | Gly | Arg | Val | Glu | Leu | Val | Gln | Leu | Lys | Ser | Glu | Glu | Ser | Lys | |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | |
| acg | ttt | gca | atg | aag | att | ctc | aag | aaa | cgt | cac | att | gtg | gac | aca | aga | 1248 |
| Thr | Phe | Ala | Met | Lys | Ile | Leu | Lys | Lys | Arg | His | Ile | Val | Asp | Thr | Arg | |
| | | | | 405 | | | | | 410 | | | | | | 415 | |
| cag | cag | gag | cac | atc | cgc | tca | gag | aag | cag | atc | atg | cag | ggg | gct | cat | 1296 |
| Gln | Gln | Glu | His | Ile | Arg | Ser | Glu | Lys | Gln | Ile | Met | Gln | Gly | Ala | His | |
| | | | | 420 | | | | | 425 | | | | | | 430 | |
| tcc | gat | ttc | ata | gtg | aga | ctg | tac | aga | aca | ttt | aag | gac | agc | aaa | tat | 1344 |
| Ser | Asp | Phe | Ile | Val | Arg | Leu | Tyr | Arg | Thr | Phe | Lys | Asp | Ser | Lys | Tyr | |
| | | | | 435 | | | | | 440 | | | | | | 445 | |
| ttg | tat | atg | ttg | atg | gaa | gct | tgt | cta | ggg | gga | gag | ctc | tgg | acc | att | 1392 |
| Leu | Tyr | Met | Leu | Met | Glu | Ala | Cys | Leu | Gly | Gly | Glu | Leu | Trp | Thr | Ile | |
| 450 | | | | | 455 | | | | | | | | | | 460 | |
| ctc | agg | gat | aga | ggg | tcg | ttt | gaa | gat | tct | aca | acc | aga | ttt | tac | aca | 1440 |
| Leu | Arg | Asp | Arg | Gly | Ser | Phe | Glu | Asp | Ser | Thr | Thr | Arg | Phe | Tyr | Thr | |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 | |
| gca | tgt | gtg | gta | gaa | gct | ttt | gcc | tat | ctg | cat | tcc | aaa | gga | atc | att | 1488 |

| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|--|
| Ile | Glu | Leu | Lys | Gly | Ile | Asp | Phe | Lys | Glu | Asp | Gly | Asn | Ile | Leu | Gly | | |
| | | | 820 | | | | | 825 | | | | | 830 | | | | |
| cac | aag | ctg | gag | tac | aac | tac | aac | agc | cac | aac | gtc | tat | atc | atg | gcc | 2544 | |
| His | Lys | Leu | Glu | Tyr | Asn | Tyr | Asn | Ser | His | Asn | Val | Tyr | Ile | Met | Ala | | |
| | | | 835 | | | | 840 | | | | | 845 | | | | | |
| gac | aag | cag | aag | aac | ggc | atc | aag | gtg | aac | ttc | aag | atc | cgc | cac | aac | 2592 | |
| Asp | Lys | Gln | Lys | Asn | Gly | Ile | Lys | Val | Asn | Phe | Lys | Ile | Arg | His | Asn | | |
| | | | 850 | | | | 855 | | | | 860 | | | | | | |
| atc | gag | gac | ggc | agc | gtg | cag | ctc | gcc | gac | cac | tac | cag | cag | aac | acc | 2640 | |
| Ile | Glu | Asp | Gly | Ser | Val | Gln | Leu | Ala | Asp | His | Tyr | Gln | Gln | Asn | Thr | | |
| | | | | | | | 870 | | | | 875 | | | | 880 | | |
| ccc | atc | ggc | gac | ggc | ccc | gtg | ctg | ctg | ccc | gac | aac | cac | tac | ctg | agc | 2688 | |
| Pro | Ile | Gly | Asp | Gly | Pro | Val | Leu | Leu | Pro | Asp | Asn | His | Tyr | Leu | Ser | | |
| | | | | | | | 885 | | | | 890 | | | | 895 | | |
| acc | cag | tcc | gcc | ctg | agc | aaa | gac | ccc | aac | gag | aag | cgc | gat | cac | atg | 2736 | |
| Thr | Gln | Ser | Ala | Leu | Ser | Lys | Asp | Pro | Asn | Glu | Lys | Arg | Asp | His | Met | | |
| | | | 900 | | | | | 905 | | | | | 910 | | | | |
| gtc | ctg | ctg | gag | ttc | gtg | acc | gcc | gcc | ggg | atc | act | ctc | ggc | atg | gac | 2784 | |
| Val | Leu | Leu | Glu | Phe | Val | Thr | Ala | Ala | Gly | Ile | Thr | Leu | Gly | Met | Asp | | |
| | | | 915 | | | | | 920 | | | | | 925 | | | | |
| gag | ctg | tac | aag | taa | | | | | | | | | | | | 2799 | |
| Glu | Leu | Tyr | Lys | | | | | | | | | | | | | | |
| | | | 930 | | | | | | | | | | | | | | |

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<211> 932

<212> PRT

<213> Artificial Sequence

<220>

<223> PKG-EGFP fusion

<400> 137

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| Met | Gly | Thr | Leu | Arg | Asp | Leu | Gln | Tyr | Ala | Leu | Gln | Glu | Lys | Ile | Glu | | |
| 1 | | | 5 | | | | | | 10 | | | | | 15 | | | |
| Glu | Leu | Arg | Gln | Arg | Asp | Ala | Leu | Ile | Asp | Glu | Leu | Glu | Leu | Glu | Leu | | |
| | | | 20 | | | | | 25 | | | | | 30 | | | | |
| Asp | Gln | Lys | Asp | Glu | Leu | Ile | Gln | Lys | Leu | Gln | Asn | Glu | Leu | Asp | Lys | | |
| | | 35 | | | | | 40 | | | | | 45 | | | | | |
| Tyr | Arg | Ser | Val | Ile | Arg | Pro | Ala | Thr | Gln | Gln | Ala | Gln | Lys | Gln | Ser | | |
| | 50 | | | | | 55 | | | | | 60 | | | | | | |
| Ala | Ser | Thr | Leu | Gln | Gly | Glu | Pro | Arg | Thr | Lys | Arg | Gln | Ala | Ile | Ser | | |
| | | | | | 70 | | | | | 75 | | | | | 80 | | |
| Ala | Glu | Pro | Thr | Ala | Phe | Asp | Ile | Gln | Asp | Leu | Ser | His | Val | Thr | Leu | | |
| | | | | 85 | | | | | 90 | | | | | 95 | | | |
| Pro | Phe | Tyr | Pro | Lys | Ser | Pro | Gln | Ser | Lys | Asp | Leu | Ile | Lys | Glu | Ala | | |
| | | | 100 | | | | | 105 | | | | | 110 | | | | |
| Ile | Leu | Asp | Asn | Asp | Phe | Met | Lys | Asn | Leu | Glu | Leu | Ser | Gln | Ile | Gln | | |
| | | 115 | | | | | 120 | | | | | 125 | | | | | |
| Glu | Ile | Val | Asp | Cys | Met | Tyr | Pro | Val | Glu | Tyr | Gly | Lys | Asp | Ser | Cys | | |
| | | 130 | | | | 135 | | | | | 140 | | | | | | |
| Ile | Ile | Lys | Glu | Gly | Asp | Val | Gly | Ser | Leu | Val | Tyr | Val | Met | Glu | Asp | | |
| | | | | | 150 | | | | | 155 | | | | 160 | | | |
| Gly | Lys | Val | Glu | Val | Thr | Lys | Glu | Gly | Val | Lys | Leu | Cys | Thr | Met | Gly | | |
| | | | | 165 | | | | | 170 | | | | | 175 | | | |
| Pro | Gly | Lys | Val | Phe | Gly | Glu | Leu | Ala | Ile | Leu | Tyr | Asn | Cys | Thr | Arg | | |

Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly
 690 695 700
 Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly His Lys
 705 710 715 720
 Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu
 725 730 735
 Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro
 740 745 750
 Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr
 755 760 765
 Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu
 770 775 780
 Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr
 785 790 795 800
 Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg
 805 810 815
 Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly
 820 825 830
 His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala
 835 840 845
 Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn
 850 855 860
 Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr
 865 870 875 880
 Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser
 885 890 895
 Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met
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 Glu Leu Tyr Lys
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<212> DNA

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<223> EGFP-PKB fusion

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<221> CDS

<222> (1)..(2181)

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| Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu | |
| 1 5 10 15 | |
| gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc | 96 |
| Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly | |
| 20 25 30 | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| gag | ggc | gag | ggc | gat | gcc | acc | tac | ggc | aag | ctg | acc | ctg | aag | ttc | atc | 144 |
| Glu | Gly | Glu | Gly | Asp | Ala | Thr | Tyr | Gly | Lys | Leu | Thr | Leu | Lys | Phe | Ile | |
| | 35 | | | | | | 40 | | | | | 45 | | | | |
| tgc | acc | acc | ggc | aag | ctg | ccc | gtg | ccc | tgg | ccc | acc | ctc | gtg | acc | acc | 192 |
| Cys | Thr | Thr | Gly | Lys | Leu | Pro | Val | Pro | Trp | Pro | Thr | Leu | Val | Thr | Thr | |
| | 50 | | | | | 55 | | | | | 60 | | | | | |
| ctg | acc | tac | ggc | gtg | cag | tgc | ttc | agc | cgc | tac | ccc | gac | cac | atg | aag | 240 |
| Leu | Thr | Tyr | Gly | Val | Gln | Cys | Phe | Ser | Arg | Tyr | Pro | Asp | His | Met | Lys | |
| | 65 | | | | 70 | | | | | 75 | | | | | 80 | |
| cag | cac | gac | ttc | ttc | aag | tcc | gcc | atg | ccc | gaa | ggc | tac | gtc | cag | gag | 288 |
| Gln | His | Asp | Phe | Phe | Lys | Ser | Ala | Met | Pro | Glu | Gly | Tyr | Val | Gln | Glu | |
| | | | | 85 | | | | | 90 | | | | | 95 | | |
| cgc | acc | atc | ttc | ttc | aag | gac | gac | ggc | aac | tac | aag | acc | cgc | gcc | gag | 336 |
| Arg | Thr | Ile | Phe | Phe | Lys | Asp | Asp | Gly | Asn | Tyr | Lys | Thr | Arg | Ala | Glu | |
| | | | 100 | | | | | 105 | | | | | 110 | | | |
| gtg | aag | ttc | gag | ggc | gac | acc | ctg | gtg | aac | cgc | atc | gag | ctg | aag | ggc | 384 |
| Val | Lys | Phe | Glu | Gly | Asp | Thr | Leu | Val | Asn | Arg | Ile | Glu | Leu | Lys | Gly | |
| | 115 | | | | | | 120 | | | | | 125 | | | | |
| atc | gac | ttc | aag | gag | gac | ggc | aac | atc | ctg | ggg | cac | aag | ctg | gag | tac | 432 |
| Ile | Asp | Phe | Lys | Glu | Asp | Gly | Asn | Ile | Leu | Gly | His | Lys | Leu | Glu | Tyr | |
| | 130 | | | | | 135 | | | | | 140 | | | | | |
| aac | tac | aac | agc | cac | aac | gtc | tat | atc | atg | gcc | gac | aag | cag | aag | aac | 480 |
| Asn | Tyr | Asn | Ser | His | Asn | Val | Tyr | Ile | Met | Ala | Asp | Lys | Gln | Lys | Asn | |
| | 145 | | | | 150 | | | | | 155 | | | | | 160 | |
| ggc | atc | aag | gtg | aac | ttc | aag | atc | cgc | cac | aac | atc | gag | gac | ggc | agc | 528 |
| Gly | Ile | Lys | Val | Asn | Phe | Lys | Ile | Arg | His | Asn | Ile | Glu | Asp | Gly | Ser | |
| | | | | 165 | | | | 170 | | | | | | 175 | | |
| gtg | cag | ctc | gcc | gac | cac | tac | cag | cag | aac | acc | ccc | atc | ggc | gac | ggc | 576 |
| Val | Gln | Leu | Ala | Asp | His | Tyr | Gln | Gln | Asn | Thr | Pro | Ile | Gly | Asp | Gly | |
| | | | 180 | | | | | 185 | | | | | 190 | | | |
| ccc | gtg | ctg | ctg | ccc | gac | aac | cac | tac | ctg | agc | acc | cag | tcc | gcc | ctg | 624 |
| Pro | Val | Leu | Leu | Pro | Asp | Asn | His | Tyr | Leu | Ser | Thr | Gln | Ser | Ala | Leu | |
| | | 195 | | | | | 200 | | | | | 205 | | | | |
| agc | aaa | gac | ccc | aac | gag | aag | cgc | gat | cac | atg | gtc | ctg | ctg | gag | ttc | 672 |
| Ser | Lys | Asp | Pro | Asn | Glu | Lys | Arg | Asp | His | Met | Val | Leu | Leu | Glu | Phe | |
| | 210 | | | | | 215 | | | | | 220 | | | | | |
| gtg | acc | gcc | gcc | ggg | atc | act | ctc | ggc | atg | gac | gag | ctg | tac | aag | tcc | 720 |
| Val | Thr | Ala | Ala | Gly | Ile | Thr | Leu | Gly | Met | Asp | Glu | Leu | Tyr | Lys | Ser | |
| | 225 | | | | 230 | | | | | 235 | | | | | 240 | |
| gga | ctc | aga | tct | cga | ggc | acc | atg | agc | gac | gtg | gct | att | gtg | aag | gag | 768 |
| Gly | Leu | Arg | Ser | Arg | Gly | Thr | Met | Ser | Asp | Val | Ala | Ile | Val | Lys | Glu | |
| | | | | 245 | | | | | 250 | | | | | 255 | | |
| ggt | tgg | ctg | cac | aaa | cga | ggg | gag | tac | atc | aag | acc | tgg | cgg | cca | cgc | 816 |
| Gly | Trp | Leu | His | Lys | Arg | Gly | Glu | Tyr | Ile | Lys | Thr | Trp | Arg | Pro | Arg | |
| | | | 260 | | | | | 265 | | | | | 270 | | | |
| tac | ttc | ctc | ctc | aag | aat | gat | ggc | acc | ttc | att | ggc | tac | aag | gag | cgg | 864 |
| Tyr | Phe | Leu | Leu | Lys | Asn | Asp | Gly | Thr | Phe | Ile | Gly | Tyr | Lys | Glu | Arg | |
| | | | 275 | | | | 280 | | | | | 285 | | | | |
| ccg | cag | gat | gtg | gac | caa | cgt | gag | gct | ccc | ctc | aac | aac | ttc | tct | gtg | 912 |
| Pro | Gln | Asp | Val | Asp | Gln | Arg | Glu | Ala | Pro | Leu | Asn | Asn | Phe | Ser | Val | |
| | | 290 | | | | 295 | | | | | 300 | | | | | |
| gcg | cag | tgc | cag | ctg | atg | aag | acg | gag | cgg | ccc | cgg | ccc | aac | acc | ttc | 960 |
| Ala | Gln | Cys | Gln | Leu | Met | Lys | Thr | Glu | Arg | Pro | Arg | Pro | Asn | Thr | Phe | |
| | 305 | | | | 310 | | | | | 315 | | | | | 320 | |
| atc | atc | cgc | tgc | ctg | cag | tgg | acc | act | gtc | atc | gaa | cgc | acc | ttc | cat | 1008 |
| Ile | Ile | Arg | Cys | Leu | Gln | Trp | Thr | Thr | Val | Ile | Glu | Arg | Thr | Phe | His | |
| | | | | 325 | | | | | 330 | | | | | 335 | | |
| gtg | gag | act | cct | gag | gag | cgg | gag | gag | tgg | aca | acc | gcc | atc | cag | act | 1056 |
| Val | Glu | Thr | Pro | Glu | Glu | Arg | Glu | Glu | Trp | Thr | Thr | Ala | Ile | Gln | Thr | |
| | | | 340 | | | | | 345 | | | | | 350 | | | |
| gtg | gct | gac | ggc | ctc | aag | aag | cag | gag | gag | gag | gag | atg | gac | ttc | cgg | 1104 |
| Val | Ala | Asp | Gly | Leu | Lys | Lys | Gln | Glu | Glu | Glu | Glu | Met | Asp | Phe | Arg | |
| | | 355 | | | | | 360 | | | | | 365 | | | | |

| | |
|---|------|
| tcg ggc tca ccc agt gac aac tca ggg gct gaa gag atg gag gtg tcc | 1152 |
| Ser Gly Ser Pro Ser Asp Asn Ser Gly Ala Glu Glu Met Glu Val Ser | |
| 370 375 380 | |
| ctg gcc aag ccc aag cac cgc gtg acc atg aac gag ttt gag tac ctg | 1200 |
| Leu Ala Lys Pro Lys His Arg Val Thr Met Asn Glu Phe Glu Tyr Leu | |
| 385 390 395 400 | |
| aag ctg ctg ggc aag ggc act ttc ggc aag gtg atc ctg gtg aag gag | 1248 |
| Lys Leu Leu Gly Lys Gly Thr Phe Gly Lys Val Ile Leu Val Lys Glu | |
| 405 410 415 | |
| aag gcc aca ggc cgc tac tac gcc atg aag atc ctc aag aag gaa gtc | 1296 |
| Lys Ala Thr Gly Arg Tyr Tyr Ala Met Lys Ile Leu Lys Lys Glu Val | |
| 420 425 430 | |
| atc gtg gcc aag gac gag gtg gcc cac aca ctc acc gag aac cgc gtc | 1344 |
| Ile Val Ala Lys Asp Glu Val Ala His Thr Leu Thr Glu Asn Arg Val | |
| 435 440 445 | |
| ctg cag aac tcc agg cac ccc ttc ctc aca gcc ctg aag tac tct ttc | 1392 |
| Leu Gln Asn Ser Arg His Pro Phe Leu Thr Ala Leu Lys Tyr Ser Phe | |
| 450 455 460 | |
| cag acc cac gac cgc ctc tgc ttt gtc atg gag tac gcc aac ggg ggc | 1440 |
| Gln Thr His Asp Arg Leu Cys Phe Val Met Glu Tyr Ala Asn Gly Gly | |
| 465 470 475 480 | |
| gag ctg ttc ttc cac ctg tcc cgg gaa cgt gtg ttc tcc gag gac cgg | 1488 |
| Glu Leu Phe Phe His Leu Ser Arg Glu Arg Val Phe Ser Glu Asp Arg | |
| 485 490 495 | |
| gcc cgc ttc tat ggc gct gag att gtg tca gcc ctg gac tac ctg cac | 1536 |
| Ala Arg Phe Tyr Gly Ala Glu Ile Val Ser Ala Leu Asp Tyr Leu His | |
| 500 505 510 | |
| tcg gag aag aac gtg gtg tac cgg gac ctc aag ctg gag aac ctc atg | 1584 |
| Ser Glu Lys Asn Val Val Tyr Arg Asp Leu Lys Leu Glu Asn Leu Met | |
| 515 520 525 | |
| ctg gac aag gac ggg cac att aag atc aca gac ttc ggg ctg tgc aag | 1632 |
| Leu Asp Lys Asp Gly His Ile Lys Ile Thr Asp Phe Gly Leu Cys Lys | |
| 530 535 540 | |
| gag ggg atc aag gac ggt gcc acc atg aag acc ttt tgc ggc aca cct | 1680 |
| Glu Gly Ile Lys Asp Gly Ala Thr Met Lys Thr Phe Cys Gly Thr Pro | |
| 545 550 555 560 | |
| gag tac ctg gcc ccc gag gtg ctg gag gac aat gac tac ggc cgt gca | 1728 |
| Glu Tyr Leu Ala Pro Glu Val Leu Glu Asp Asn Asp Tyr Gly Arg Ala | |
| 565 570 575 | |
| gtg gac tgg tgg ggg ctg ggc gtg gtc atg tac gag atg atg tgc ggt | 1776 |
| Val Asp Trp Trp Gly Leu Gly Val Val Met Tyr Glu Met Met Cys Gly | |
| 580 585 590 | |
| cgc ctg ccc ttc tac aac cag gac cat gag aag ctt ttt gag ctc atc | 1824 |
| Arg Leu Pro Phe Tyr Asn Gln Asp His Glu Lys Leu Phe Glu Leu Ile | |
| 595 600 605 | |
| ctc atg gag gag atc cgc ttc ccg cgc acg ctt ggt ccc gag gcc aag | 1872 |
| Leu Met Glu Glu Ile Arg Phe Pro Arg Thr Leu Gly Pro Glu Ala Lys | |
| 610 615 620 | |
| tcc ttg ctt tca ggg ctg ctc aag aag gac ccc aag cag agg ctt ggc | 1920 |
| Ser Leu Leu Ser Gly Leu Leu Lys Lys Asp Pro Lys Gln Arg Leu Gly | |
| 625 630 635 640 | |
| ggg ggc tcc gag gac gcc aag gag atc atg cag cat cgc ttc ttt gcc | 1968 |
| Gly Gly Ser Glu Asp Ala Lys Glu Ile Met Gln His Arg Phe Phe Ala | |
| 645 650 655 | |
| ggt atc gtg tgg cag cac gtg tac gag aag aag ctc agc cca ccc ttc | 2016 |
| Gly Ile Val Trp Gln His Val Tyr Glu Lys Lys Leu Ser Pro Pro Phe | |
| 660 665 670 | |
| aag ccc cag gtc acg tcg gag act gac acc agg tat ttt gat gag gag | 2064 |
| Lys Pro Gln Val Thr Ser Glu Thr Asp Thr Arg Tyr Phe Asp Glu Glu | |
| 675 680 685 | |
| ttc acg gcc cag atg atc acc atc aca cca cct gac caa gat gac agc | 2112 |
| Phe Thr Ala Gln Met Ile Thr Ile Thr Pro Pro Asp Gln Asp Asp Ser | |
| 690 695 700 | |

| | |
|---|------|
| atg gag tgt gtg gac agc gag cgc agg ccc cac ttc ccc cag ttc tcc | 2160 |
| Met Glu Cys Val Asp Ser Glu Arg Arg Pro His Phe Pro Gln Phe Ser | |
| 705 710 715 720 | |
| tac tcg gcc agc agc acg gcc tga | 2184 |
| Tyr Ser Ala Ser Ser Thr Ala | |
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<211> 727

<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-PKB fusion

<400> 139

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| Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly | |
| 20 25 30 | |
| Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile | |
| 35 40 45 | |
| Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr | |
| 50 55 60 | |
| Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys | |
| 65 70 75 80 | |
| Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu | |
| 85 90 95 | |
| Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu | |
| 100 105 110 | |
| Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly | |
| 115 120 125 | |
| Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr | |
| 130 135 140 | |
| Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn | |
| 145 150 155 160 | |
| Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser | |
| 165 170 175 | |
| Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly | |
| 180 185 190 | |
| Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu | |
| 195 200 205 | |
| Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe | |
| 210 215 220 | |
| Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser | |
| 225 230 235 240 | |
| Gly Leu Arg Ser Arg Gly Thr Met Ser Asp Val Ala Ile Val Lys Glu | |
| 245 250 255 | |
| Gly Trp Leu His Lys Arg Gly Glu Tyr Ile Lys Thr Trp Arg Pro Arg | |
| 260 265 270 | |
| Tyr Phe Leu Leu Lys Asn Asp Gly Thr Phe Ile Gly Tyr Lys Glu Arg | |
| 275 280 285 | |
| Pro Gln Asp Val Asp Gln Arg Glu Ala Pro Leu Asn Asn Phe Ser Val | |
| 290 295 300 | |
| Ala Gln Cys Gln Leu Met Lys Thr Glu Arg Pro Arg Pro Asn Thr Phe | |
| 305 310 315 320 | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Ile | Ile | Arg | Cys | Leu | Gln | Trp | Thr | Thr | Val | Ile | Glu | Arg | Thr | Phe | His | |
| | | | | 325 | | | | | 330 | | | | | 335 | | |
| Val | Glu | Thr | Pro | Glu | Glu | Arg | Glu | Glu | Trp | Thr | Thr | Ala | Ile | Gln | Thr | |
| | | | | 340 | | | | | 345 | | | | | 350 | | |
| Val | Ala | Asp | Gly | Leu | Lys | Lys | Gln | Glu | Glu | Glu | Glu | Met | Asp | Phe | Arg | |
| | | | | 355 | | | | | 360 | | | | | 365 | | |
| Ser | Gly | Ser | Pro | Ser | Asp | Asn | Ser | Gly | Ala | Glu | Glu | Met | Glu | Val | Ser | |
| | | | | 370 | | | | | 375 | | | | 380 | | | |
| Leu | Ala | Lys | Pro | Lys | His | Arg | Val | Thr | Met | Asn | Glu | Phe | Glu | Tyr | Leu | |
| | | | | 385 | | | | | 390 | | | | 395 | | 400 | |
| Lys | Leu | Leu | Gly | Lys | Gly | Thr | Phe | Gly | Lys | Val | Ile | Leu | Val | Lys | Glu | |
| | | | | 405 | | | | | 410 | | | | | 415 | | |
| Lys | Ala | Thr | Gly | Arg | Tyr | Tyr | Ala | Met | Lys | Ile | Leu | Lys | Lys | Glu | Val | |
| | | | | 420 | | | | | 425 | | | | | 430 | | |
| Ile | Val | Ala | Lys | Asp | Glu | Val | Ala | His | Thr | Leu | Thr | Glu | Asn | Arg | Val | |
| | | | | 435 | | | | | 440 | | | | 445 | | | |
| Leu | Gln | Asn | Ser | Arg | His | Pro | Phe | Leu | Thr | Ala | Leu | Lys | Tyr | Ser | Phe | |
| | | | | 450 | | | | | 455 | | | | 460 | | | |
| Gln | Thr | His | Asp | Arg | Leu | Cys | Phe | Val | Met | Glu | Tyr | Ala | Asn | Gly | Gly | |
| | | | | 465 | | | | | 470 | | | | 475 | | 480 | |
| Glu | Leu | Phe | Phe | His | Leu | Ser | Arg | Glu | Arg | Val | Phe | Ser | Glu | Asp | Arg | |
| | | | | 485 | | | | | 490 | | | | | 495 | | |
| Ala | Arg | Phe | Tyr | Gly | Ala | Glu | Ile | Val | Ser | Ala | Leu | Asp | Tyr | Leu | His | |
| | | | | 500 | | | | | 505 | | | | | 510 | | |
| Ser | Glu | Lys | Asn | Val | Val | Tyr | Arg | Asp | Leu | Lys | Leu | Glu | Asn | Leu | Met | |
| | | | | 515 | | | | | 520 | | | | 525 | | | |
| Leu | Asp | Lys | Asp | Gly | His | Ile | Lys | Ile | Thr | Asp | Phe | Gly | Leu | Cys | Lys | |
| | | | | 530 | | | | | 535 | | | | 540 | | | |
| Glu | Gly | Ile | Lys | Asp | Gly | Ala | Thr | Met | Lys | Thr | Phe | Cys | Gly | Thr | Pro | |
| | | | | 545 | | | | | 550 | | | | 555 | | 560 | |
| Glu | Tyr | Leu | Ala | Pro | Glu | Val | Leu | Glu | Asp | Asn | Asp | Tyr | Gly | Arg | Ala | |
| | | | | 565 | | | | | 570 | | | | | 575 | | |
| Val | Asp | Trp | Trp | Gly | Leu | Gly | Val | Val | Met | Tyr | Glu | Met | Met | Cys | Gly | |
| | | | | 580 | | | | | 585 | | | | | 590 | | |
| Arg | Leu | Pro | Phe | Tyr | Asn | Gln | Asp | His | Glu | Lys | Leu | Phe | Glu | Leu | Ile | |
| | | | | 595 | | | | | 600 | | | | 605 | | | |
| Leu | Met | Glu | Glu | Ile | Arg | Phe | Pro | Arg | Thr | Leu | Gly | Pro | Glu | Ala | Lys | |
| | | | | 610 | | | | | 615 | | | | 620 | | | |
| Ser | Leu | Leu | Ser | Gly | Leu | Leu | Lys | Lys | Asp | Pro | Lys | Gln | Arg | Leu | Gly | |
| | | | | 625 | | | | | 630 | | | | 635 | | 640 | |
| Gly | Gly | Ser | Glu | Asp | Ala | Lys | Glu | Ile | Met | Gln | His | Arg | Phe | Phe | Ala | |
| | | | | 645 | | | | | 650 | | | | | 655 | | |
| Gly | Ile | Val | Trp | Gln | His | Val | Tyr | Glu | Lys | Lys | Leu | Ser | Pro | Pro | Phe | |
| | | | | 660 | | | | | 665 | | | | 670 | | | |
| Lys | Pro | Gln | Val | Thr | Ser | Glu | Thr | Asp | Thr | Arg | Tyr | Phe | Asp | Glu | Glu | |
| | | | | 675 | | | | | 680 | | | | 685 | | | |
| Phe | Thr | Ala | Gln | Met | Ile | Thr | Ile | Thr | Pro | Pro | Asp | Gln | Asp | Asp | Ser | |
| | | | | 690 | | | | | 695 | | | | 700 | | | |
| Met | Glu | Cys | Val | Asp | Ser | Glu | Arg | Arg | Pro | His | Phe | Pro | Gln | Phe | Ser | |
| | | | | 705 | | | | | 710 | | | | 715 | | 720 | |
| Tyr | Ser | Ala | Ser | Ser | Thr | Ala | | | | | | | | | | |
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<220>

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<400> 140

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| Met Asp Glu Leu Phe Pro Leu Ile Phe Pro Ala Glu Pro Ala Gln Ala | |
| 1 5 10 15 | |
| tct ggc ccc tat gtg gag atc att gag cag ccc aag cag cgg ggc atg | 96 |
| Ser Gly Pro Tyr Val Glu Ile Ile Glu Gln Pro Lys Gln Arg Gly Met | |
| 20 25 30 | |
| cgc ttc cgc tac aag tgc gag ggg cgc tcc gcg ggc agc atc cca ggc | 144 |
| Arg Phe Arg Tyr Lys Cys Glu Gly Arg Ser Ala Gly Ser Ile Pro Gly | |
| 35 40 45 | |
| gag agg agc aca gat acc acc aag acc cac ccc acc atc aag atc aat | 192 |
| Glu Arg Ser Thr Asp Thr Lys Thr His Pro Thr Ile Lys Ile Asn | |
| 50 55 60 | |
| ggc tac aca gga cca ggg aca gtg cgc atc tcc ctg gtc acc aag gac | 240 |
| Gly Tyr Thr Gly Pro Gly Thr Val Arg Ile Ser Leu Val Thr Lys Asp | |
| 65 70 75 80 | |
| cct cct cac cgg cct cac ccc cac gag ctt gta gga aag gac tgc cgg | 288 |
| Pro Pro His Arg Pro His Pro His Glu Leu Val Gly Lys Asp Cys Arg | |
| 85 90 95 | |
| gat ggc ttc tat gag gct gag ctc tgc ccg gac cgc tgc atc cac agt | 336 |
| Asp Gly Phe Tyr Glu Ala Glu Leu Cys Pro Asp Arg Cys Ile His Ser | |
| 100 105 110 | |
| ttc cag aac ctg gga atc cag tgt gtg aag aag cgg gac ctg gag cag | 384 |
| Phe Gln Asn Leu Gly Ile Gln Cys Val Lys Lys Arg Asp Leu Glu Gln | |
| 115 120 125 | |
| gct atc agt cag cgc atc cag acc aac aac aac ccc ttc caa gtt cct | 432 |
| Ala Ile Ser Gln Arg Ile Gln Thr Asn Asn Asn Pro Phe Gln Val Pro | |
| 130 135 140 | |
| ata gaa gag cag cgt ggg gac tac gac ctg aat gct gtg cgg ctc tgc | 480 |
| Ile Glu Glu Gln Arg Gly Asp Tyr Asp Leu Asn Ala Val Arg Leu Cys | |
| 145 150 155 160 | |
| ttc cag gtg aca gtg cgg gac cca tca ggc agg ccc ctc cgc ctg ccg | 528 |
| Phe Gln Val Thr Val Arg Asp Pro Ser Gly Arg Pro Leu Arg Leu Pro | |
| 165 170 175 | |
| cct gtc ctt cct cat ccc atc ttt gac aat cgt gcc ccc aac act gcc | 576 |
| Pro Val Leu Pro His Pro Ile Phe Asp Asn Arg Ala Pro Asn Thr Ala | |
| 180 185 190 | |
| gag ctc aag atc tgc cga gtg aac cga aac tct ggc agc tgc ctc ggt | 624 |
| Glu Leu Lys Ile Cys Arg Val Asn Arg Asn Ser Gly Ser Cys Leu Gly | |
| 195 200 205 | |
| ggg gat gag atc ttc cta ctg gac aag gtg cag aaa gag gac att | 672 |
| Gly Asp Glu Ile Phe Leu Leu Cys Asp Lys Val Gln Lys Glu Asp Ile | |
| 210 215 220 | |
| gag gtg tat ttc acg gga cca ggc tgg gag gcc cga ggc tcc ttt tcg | 720 |
| Glu Val Tyr Phe Thr Gly Pro Gly Trp Glu Ala Arg Gly Ser Phe Ser | |
| 225 230 235 240 | |
| caa gct gat gtg cac cga caa gtg gcc att gtg ttc cgg acc cct ccc | 768 |
| Gln Ala Asp Val His Arg Gln Val Ala Ile Val Phe Arg Thr Pro Pro | |
| 245 250 255 | |

| | |
|---|------|
| tac gca gac ccc agc ctg cag gct cct gtg cgt gtc tcc atg cag ctg | 816 |
| Tyr Ala Asp Pro Ser Leu Gln Ala Pro Val Arg Val Ser Met Gln Leu | |
| 260 265 270 | |
| cgg cgg cct tcc gac cgg gag ctc agt gag ccc atg gaa ttc cag tac | 864 |
| Arg Arg Pro Ser Asp Arg Glu Leu Ser Glu Pro Met Glu Phe Gln Tyr | |
| 275 280 285 | |
| ctg cca gat aca gac gat cgt cac cgg att gag gag aaa cgt aaa agg | 912 |
| Leu Pro Asp Thr Asp Asp Arg His Arg Ile Glu Glu Lys Arg Lys Arg | |
| 290 295 300 | |
| aca tat gag acc ttc aag agc atc atg aag aag agt cct ttc agc gga | 960 |
| Thr Tyr Glu Thr Phe Lys Ser Ile Met Lys Lys Ser Pro Phe Ser Gly | |
| 305 310 315 320 | |
| ccc acc gac ccc cgg cct cca cct cga cgc att gct gtg cct tcc cgc | 1008 |
| Pro Thr Asp Pro Arg Pro Pro Pro Arg Arg Ile Ala Val Pro Ser Arg | |
| 325 330 335 | |
| agc tca gct tct gtc ccc aag cca gca ccc cag ccc tat ccc ttt acg | 1056 |
| Ser Ser Ala Ser Val Pro Lys Pro Ala Pro Gln Pro Tyr Pro Phe Thr | |
| 340 345 350 | |
| tca tcc ctg agc acc atc aac tat gat gag ttt ccc acc atg gtg ttt | 1104 |
| Ser Ser Leu Ser Thr Ile Asn Tyr Asp Glu Phe Pro Thr Met Val Phe | |
| 355 360 365 | |
| cct tct ggg cag atc agc cag gcc tcg gcc ttg gcc ccg gcc cct ccc | 1152 |
| Pro Ser Gly Gln Ile Ser Gln Ala Ser Ala Leu Ala Pro Ala Pro Pro | |
| 370 375 380 | |
| caa gtc ctg ccc cag gct cca gcc cct gcc cct gct cca gcc atg gta | 1200 |
| Gln Val Leu Pro Gln Ala Pro Ala Pro Ala Pro Ala Pro Ala Met Val | |
| 385 390 395 400 | |
| tca gct ctg gcc cag gcc cca gcc cct gtc cca gtc cta gcc cca ggc | 1248 |
| Ser Ala Leu Ala Gln Ala Pro Ala Pro Val Pro Val Leu Ala Pro Gly | |
| 405 410 415 | |
| cct cct cag gct gtg gcc cca cct gcc ccc aag ccc acc cag gct ggg | 1296 |
| Pro Pro Gln Ala Val Ala Pro Pro Ala Pro Lys Pro Thr Gln Ala Gly | |
| 420 425 430 | |
| gaa gga acg ctg tca gag gcc ctg ctg cag ctg cag ttt gat gat gaa | 1344 |
| Glu Gly Thr Leu Ser Glu Ala Leu Leu Gln Leu Gln Phe Asp Asp Glu | |
| 435 440 445 | |
| gac ctg ggg gcc ttg ctt ggc aac agc aca gac cca gct gtg ttc aca | 1392 |
| Asp Leu Gly Ala Leu Leu Gly Asn Ser Thr Asp Pro Ala Val Phe Thr | |
| 450 455 460 | |
| gac ctg gca tcc gtc gac aac tcc gag ttt cag cag ctg ctg aac cag | 1440 |
| Asp Leu Ala Ser Val Asp Asn Ser Glu Phe Gln Gln Leu Leu Asn Gln | |
| 465 470 475 480 | |
| ggc ata cct gtg gcc ccc cac aca act gag ccc atg ctg atg gag tac | 1488 |
| Gly Ile Pro Val Ala Pro His Thr Thr Glu Pro Met Leu Met Glu Tyr | |
| 485 490 495 | |
| cct gag gct ata act cgc cta gtg aca ggg gcc cag agg ccc ccc gac | 1536 |
| Pro Glu Ala Ile Thr Arg Leu Val Thr Gly Ala Gln Arg Pro Pro Asp | |
| 500 505 510 | |
| cca gct cct gct cca ctg ggg gcc ccg ggg ctc ccc aat ggc ctc ctt | 1584 |
| Pro Ala Pro Ala Pro Leu Gly Ala Pro Gly Leu Pro Asn Gly Leu Leu | |
| 515 520 525 | |
| tca gga gat gaa gac ttc tcc tcc att gcg gac atg gac ttc tca gcc | 1632 |
| Ser Gly Asp Glu Asp Phe Ser Ser Ile Ala Asp Met Asp Phe Ser Ala | |
| 530 535 540 | |
| ctg ctg agt cag atc agc tcc ttg gat cca ccg gtc gcc acc atg gtg | 1680 |
| Leu Leu Ser Gln Ile Ser Ser Leu Asp Pro Pro Val Ala Thr Met Val | |
| 545 550 555 560 | |
| agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg gtc gag | 1728 |
| Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu | |
| 565 570 575 | |
| ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc gag ggc | 1776 |
| Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly | |
| 580 585 590 | |

| | |
|---|------|
| gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc tgc acc | 1824 |
| Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr | |
| 595 600 605 | |
| acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc ctg acc | 1872 |
| Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr | |
| 610 615 620 | |
| tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag cag cac | 1920 |
| Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln His | |
| 625 630 635 640 | |
| gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag cgc acc | 1968 |
| Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg Thr | |
| 645 650 655 | |
| atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag gtg aag | 2016 |
| Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys | |
| 660 665 670 | |
| ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc atc gac | 2064 |
| Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile Asp | |
| 675 680 685 | |
| ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac aac tac | 2112 |
| Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn Tyr | |
| 690 695 700 | |
| aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac ggc atc | 2160 |
| Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly Ile | |
| 705 710 715 720 | |
| aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc gtg cag | 2208 |
| Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val Gln | |
| 725 730 735 | |
| ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc ccc gtg | 2256 |
| Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro Val | |
| 740 745 750 | |
| ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg agc aaa | 2304 |
| Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser Lys | |
| 755 760 765 | |
| gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc gtg acc | 2352 |
| Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val Thr | |
| 770 775 780 | |
| gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag taa | 2394 |
| Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys | |
| 785 790 795 | |

<210> 141

<211> 797

<212> PRT

<213> Artificial Sequence

<220>

<223> NFkappaB-EGFP fusion

<400> 141

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| Met Asp Glu Leu Phe Pro Leu Ile Phe Pro Ala Glu Pro Ala Gln Ala | |
| 1 5 10 15 | |
| Ser Gly Pro Tyr Val Glu Ile Ile Glu Gln Pro Lys Gln Arg Gly Met | |
| 20 25 30 | |
| Arg Phe Arg Tyr Lys Cys Glu Gly Arg Ser Ala Gly Ser Ile Pro Gly | |
| 35 40 45 | |
| Glu Arg Ser Thr Asp Thr Thr Lys Thr His Pro Thr Ile Lys Ile Asn | |

| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|
| 50 | | | | | | 55 | | | | | | 60 | | | | | |
| Gly | Tyr | Thr | Gly | Pro | Gly | Thr | Val | Arg | Ile | Ser | Leu | Val | Thr | Lys | Asp | | |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 | | |
| Pro | Pro | His | Arg | Pro | His | Pro | His | Glu | Leu | Val | Gly | Lys | Asp | Cys | Arg | | |
| | | | | 85 | | | | | 90 | | | | | 95 | | | |
| Asp | Gly | Phe | Tyr | Glu | Ala | Glu | Leu | Cys | Pro | Asp | Arg | Cys | Ile | His | Ser | | |
| | | | 100 | | | | | 105 | | | | | 110 | | | | |
| Phe | Gln | Asn | Leu | Gly | Ile | Gln | Cys | Val | Lys | Lys | Arg | Asp | Leu | Glu | Gln | | |
| | | 115 | | | | | 120 | | | | | 125 | | | | | |
| Ala | Ile | Ser | Gln | Arg | Ile | Gln | Thr | Asn | Asn | Asn | Pro | Phe | Gln | Val | Pro | | |
| | | 130 | | | | | 135 | | | | 140 | | | | | | |
| Ile | Glu | Glu | Gln | Arg | Gly | Asp | Tyr | Asp | Leu | Asn | Ala | Val | Arg | Leu | Cys | | |
| 145 | | | | | 150 | | | | 155 | | | | | 160 | | | |
| Phe | Gln | Val | Thr | Val | Arg | Asp | Pro | Ser | Gly | Arg | Pro | Leu | Arg | Leu | Pro | | |
| | | | | 165 | | | | | 170 | | | | | 175 | | | |
| Pro | Val | Leu | Pro | His | Pro | Ile | Phe | Asp | Asn | Arg | Ala | Pro | Asn | Thr | Ala | | |
| | | | 180 | | | | | 185 | | | | | 190 | | | | |
| Glu | Leu | Lys | Ile | Cys | Arg | Val | Asn | Arg | Asn | Ser | Gly | Ser | Cys | Leu | Gly | | |
| | | 195 | | | | | 200 | | | | 205 | | | | | | |
| Gly | Asp | Glu | Ile | Phe | Leu | Leu | Cys | Asp | Lys | Val | Gln | Lys | Glu | Asp | Ile | | |
| 210 | | | | | | 215 | | | | | 220 | | | | | | |
| Glu | Val | Tyr | Phe | Thr | Gly | Pro | Gly | Trp | Glu | Ala | Arg | Gly | Ser | Phe | Ser | | |
| 225 | | | | | 230 | | | | 235 | | | | | 240 | | | |
| Gln | Ala | Asp | Val | His | Arg | Gln | Val | Ala | Ile | Val | Phe | Arg | Thr | Pro | Pro | | |
| | | | | 245 | | | | | 250 | | | | | 255 | | | |
| Tyr | Ala | Asp | Pro | Ser | Leu | Gln | Ala | Pro | Val | Arg | Val | Ser | Met | Gln | Leu | | |
| | | 260 | | | | | | 265 | | | | | 270 | | | | |
| Arg | Arg | Pro | Ser | Asp | Arg | Glu | Leu | Ser | Glu | Pro | Met | Glu | Phe | Gln | Tyr | | |
| | | 275 | | | | | 280 | | | | | 285 | | | | | |
| Leu | Pro | Asp | Thr | Asp | Asp | Arg | His | Arg | Ile | Glu | Glu | Lys | Arg | Lys | Arg | | |
| | | 290 | | | | 295 | | | | | 300 | | | | | | |
| Thr | Tyr | Glu | Thr | Phe | Lys | Ser | Ile | Met | Lys | Lys | Ser | Pro | Phe | Ser | Gly | | |
| 305 | | | | | 310 | | | | | 315 | | | | 320 | | | |
| Pro | Thr | Asp | Pro | Arg | Pro | Pro | Pro | Arg | Arg | Ile | Ala | Val | Pro | Ser | Arg | | |
| | | | | 325 | | | | | 330 | | | | | 335 | | | |
| Ser | Ser | Ala | Ser | Val | Pro | Lys | Pro | Ala | Pro | Gln | Pro | Tyr | Pro | Phe | Thr | | |
| | | 340 | | | | | | 345 | | | | | 350 | | | | |
| Ser | Ser | Leu | Ser | Thr | Ile | Asn | Tyr | Asp | Glu | Phe | Pro | Thr | Met | Val | Phe | | |
| | | 355 | | | | | 360 | | | | | 365 | | | | | |
| Pro | Ser | Gly | Gln | Ile | Ser | Gln | Ala | Ser | Ala | Leu | Ala | Pro | Ala | Pro | Pro | | |
| | | 370 | | | | 375 | | | | | 380 | | | | | | |
| Gln | Val | Leu | Pro | Gln | Ala | Pro | Ala | Pro | Ala | Pro | Ala | Pro | Ala | Met | Val | | |
| 385 | | | | | 390 | | | | | 395 | | | | 400 | | | |
| Ser | Ala | Leu | Ala | Gln | Ala | Pro | Ala | Pro | Val | Pro | Val | Leu | Ala | Pro | Gly | | |
| | | | | 405 | | | | | 410 | | | | 415 | | | | |
| Pro | Pro | Gln | Ala | Val | Ala | Pro | Pro | Ala | Pro | Lys | Pro | Thr | Gln | Ala | Gly | | |
| | | | | 420 | | | | 425 | | | | | 430 | | | | |
| Glu | Gly | Thr | Leu | Ser | Glu | Ala | Leu | Leu | Gln | Leu | Gln | Phe | Asp | Asp | Glu | | |
| | | 435 | | | | | 440 | | | | 445 | | | | | | |
| Asp | Leu | Gly | Ala | Leu | Leu | Gly | Asn | Ser | Thr | Asp | Pro | Ala | Val | Phe | Thr | | |
| 450 | | | | | | 455 | | | | | 460 | | | | | | |
| Asp | Leu | Ala | Ser | Val | Asp | Asn | Ser | Glu | Phe | Gln | Gln | Leu | Leu | Asn | Gln | | |
| 465 | | | | | 470 | | | | | 475 | | | | 480 | | | |
| Gly | Ile | Pro | Val | Ala | Pro | His | Thr | Thr | Glu | Pro | Met | Leu | Met | Glu | Tyr | | |
| | | | | 485 | | | | | 490 | | | | | 495 | | | |
| Pro | Glu | Ala | Ile | Thr | Arg | Leu | Val | Thr | Gly | Ala | Gln | Arg | Pro | Pro | Asp | | |
| | | | 500 | | | | | 505 | | | | | 510 | | | | |
| Pro | Ala | Pro | Ala | Pro | Leu | Gly | Ala | Pro | Gly | Leu | Pro | Asn | Gly | Leu | Leu | | |
| | | 515 | | | | 520 | | | | | | 525 | | | | | |
| Ser | Gly | Asp | Glu | Asp | Phe | Ser | Ser | Ile | Ala | Asp | Met | Asp | Phe | Ser | Ala | | |
| | | 530 | | | | 535 | | | | 540 | | | | | | | |
| Leu | Leu | Ser | Gln | Ile | Ser | Ser | Leu | Asp | Pro | Pro | Val | Ala | Thr | Met | Val | | |
| 545 | | | | | 550 | | | | 555 | | | | | 560 | | | |

Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu
 565 570 575
 Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly
 580 585 590
 Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr
 595 600 605
 Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr
 610 615 620
 Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln His
 625 630 635 640
 Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg Thr
 645 650 655
 Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys
 660 665 670
 Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile Asp
 675 680 685
 Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn Tyr
 690 695 700
 Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly Ile
 705 710 715 720
 Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val Gln
 725 730 735
 Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro Val
 740 745 750
 Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser Lys
 755 760 765
 Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val Thr
 770 775 780
 Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys
 785 790 795

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<212> DNA

<213> Artificial Sequence

<220>

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<222> (1)..(2391)

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| Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu | |
| 1 5 10 15 | |
| gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc | 96 |
| Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly | |
| 20 25 30 | |
| gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc | 144 |
| Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile | |

| | | | | |
|---|-----|-----|-----|------|
| | 35 | 40 | 45 | |
| tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc | | | | 192 |
| Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr | | | | |
| 50 | 55 | 60 | | |
| ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag | | | | 240 |
| Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys | | | | |
| 65 | 70 | 75 | 80 | |
| cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag | | | | 288 |
| Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu | | | | |
| 85 | 90 | 95 | | |
| cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag | | | | 336 |
| Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu | | | | |
| 100 | 105 | 110 | | |
| gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc | | | | 384 |
| Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly | | | | |
| 115 | 120 | 125 | | |
| atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac | | | | 432 |
| Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr | | | | |
| 130 | 135 | 140 | | |
| aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac | | | | 480 |
| Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn | | | | |
| 145 | 150 | 155 | 160 | |
| ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc | | | | 528 |
| Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser | | | | |
| 165 | 170 | 175 | | |
| gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc | | | | 576 |
| Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly | | | | |
| 180 | 185 | 190 | | |
| ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg | | | | 624 |
| Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu | | | | |
| 195 | 200 | 205 | | |
| agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc | | | | 672 |
| Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe | | | | |
| 210 | 215 | 220 | | |
| gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc | | | | 720 |
| Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser | | | | |
| 225 | 230 | 235 | 240 | |
| gga ctc aga tct cga gcc atg gac gaa ctg ttc ccc ctc atc ttc ccg | | | | 768 |
| Gly Leu Arg Ser Arg Ala Met Asp Glu Phe Pro Leu Ile Phe Pro | | | | |
| 245 | 250 | 255 | | |
| gca gag cca gcc cag gcc tct ggc ccc tat gtg gag atc att gag cag | | | | 816 |
| Ala Glu Pro Ala Gln Ala Ser Gly Pro Tyr Val Glu Ile Ile Glu Gln | | | | |
| 260 | 265 | 270 | | |
| ccc aag cag cgg ggc atg cgc ttc cgc tac aag tgc gag ggg cgc tcc | | | | 864 |
| Pro Lys Gln Arg Gly Met Arg Phe Arg Tyr Lys Cys Glu Gly Arg Ser | | | | |
| 275 | 280 | 285 | | |
| gcg ggc agc atc cca ggc gag agg agc aca gat acc acc aag acc cac | | | | 912 |
| Ala Gly Ser Ile Pro Gly Glu Arg Ser Thr Asp Thr Thr Lys Thr His | | | | |
| 290 | 295 | 300 | | |
| ccc acc atc aag atc aat ggc tac aca gga cca ggg aca gtg cgc atc | | | | 960 |
| Pro Thr Ile Lys Ile Asn Gly Tyr Thr Gly Pro Gly Thr Val Arg Ile | | | | |
| 305 | 310 | 315 | 320 | |
| tcc ctg gtc acc aag gac cct cct cac cgg cct cac ccc cac gag ctt | | | | 1008 |
| Ser Leu Val Thr Lys Asp Pro Pro His Arg Pro His Pro His Glu Leu | | | | |
| 325 | 330 | 335 | | |
| gta gga aag gac tgc cgg gat ggc ttc tat gag gct gag ctc tgc ccg | | | | 1056 |
| Val Gly Lys Asp Cys Arg Asp Gly Phe Tyr Glu Ala Glu Leu Cys Pro | | | | |
| 340 | 345 | 350 | | |
| gac cgc tgc atc cac agt ttc cag aac ctg gga atc cag tgt gtg aag | | | | 1104 |
| Asp Arg Cys Ile His Ser Phe Gln Asn Leu Gly Ile Gln Cys Val Lys | | | | |
| 355 | 360 | 365 | | |
| aag cgg gac ctg gag cag gct atc agt cag cgc atc cag acc aac aac | | | | 1152 |
| Lys Arg Asp Leu Glu Gln Ala Ile Ser Gln Arg Ile Gln Thr Asn Asn | | | | |

| | | | |
|---|-----|-----|------|
| 370 | 375 | 380 | |
| aac ccc ttc caa gtt cct ata gaa gag cag cgt ggg gac tac gac ctg | | | 1200 |
| Asn Pro Phe Gln Val Pro Ile Glu Glu Gln Arg Gly Asp Tyr Asp Leu | | | |
| 385 | 390 | 395 | 400 |
| aat gct gtg cgg ctg tgc ttc cag gtg aca gtg cgg gac cca tca ggc | | | 1248 |
| Asn Ala Val Arg Leu Cys Phe Gln Val Thr Val Arg Asp Pro Ser Gly | | | |
| 405 | 410 | 415 | |
| agg ccc ctg cgc ctg ccg cct gtc ctt cct cat ccc atc ttt gac aat | | | 1296 |
| Arg Pro Leu Arg Leu Pro Pro Val Leu Pro His Pro Ile Phe Asp Asn | | | |
| 420 | 425 | 430 | |
| cgt gcc ccc aac act gcc gag ctg aag atc tgc cga gtg aac cga aac | | | 1344 |
| Arg Ala Pro Asn Thr Ala Glu Leu Lys Ile Cys Arg Val Asn Arg Asn | | | |
| 435 | 440 | 445 | |
| tct ggc agc tgc ctg ggt ggg gat gag atc ttc cta ctg tgt gac aag | | | 1392 |
| Ser Gly Ser Cys Leu Gly Gly Asp Glu Ile Phe Leu Leu Cys Asp Lys | | | |
| 450 | 455 | 460 | |
| gtg cag aaa gag gac att gag gtg tat ttc acg gga cca ggc tgg gag | | | 1440 |
| Val Gln Lys Glu Asp Ile Glu Val Tyr Phe Thr Gly Pro Gly Trp Glu | | | |
| 465 | 470 | 475 | 480 |
| gcc cga ggc tcc ttt tcg caa gct gat gtg cac cga caa gtg gcc att | | | 1488 |
| Ala Arg Gly Ser Phe Ser Gln Ala Asp Val His Arg Gln Val Ala Ile | | | |
| 485 | 490 | 495 | |
| gtg ttc cgg acc cct ccc tac gca gac ccc agc ctg cag gct cct gtg | | | 1536 |
| Val Phe Arg Thr Pro Pro Tyr Ala Asp Pro Ser Leu Gln Ala Pro Val | | | |
| 500 | 505 | 510 | |
| cgt gtc tcc atg cag ctg cgg cgg cct tcc gac cgg gag ctg agt gag | | | 1584 |
| Arg Val Ser Met Gln Leu Arg Arg Pro Ser Asp Arg Glu Leu Ser Glu | | | |
| 515 | 520 | 525 | |
| ccc atg gaa ttc cag tac ctg cca gat aca gac gat cgt cac cgg att | | | 1632 |
| Pro Met Glu Phe Gln Tyr Leu Pro Asp Thr Asp Arg His Arg Ile | | | |
| 530 | 535 | 540 | |
| gag gag aaa cgt aaa agg aca tat gag acc ttc aag agc atc atg aag | | | 1680 |
| Glu Glu Lys Arg Lys Arg Thr Tyr Glu Thr Phe Lys Ser Ile Met Lys | | | |
| 545 | 550 | 555 | 560 |
| aag agt cct ttc agc gga ccc acc gac ccc cgg cct cca cct cga cgc | | | 1728 |
| Lys Ser Pro Phe Ser Gly Pro Thr Asp Pro Arg Pro Pro Pro Arg Arg | | | |
| 565 | 570 | 575 | |
| att gct gtg cct tcc cgc agc tca gct tct gtc ccc aag cca gca ccc | | | 1776 |
| Ile Ala Val Pro Ser Arg Ser Ser Ala Ser Val Pro Lys Pro Ala Pro | | | |
| 580 | 585 | 590 | |
| cag ccc tat ccc ttt acg tca tcc ctg agc acc atc aac tat gat gag | | | 1824 |
| Gln Pro Tyr Pro Phe Thr Ser Ser Leu Ser Thr Ile Asn Tyr Asp Glu | | | |
| 595 | 600 | 605 | |
| ttt ccc acc atg gtg ttt cct tct ggg cag atc agc cag gcc tcg gcc | | | 1872 |
| Phe Pro Thr Met Val Phe Pro Ser Gly Gln Ile Ser Gln Ala Ser Ala | | | |
| 610 | 615 | 620 | |
| ttg gcc ccg gcc cct ccc caa gtc ctg ccc cag gct cca gcc cct gcc | | | 1920 |
| Leu Ala Pro Ala Pro Pro Gln Val Leu Pro Gln Ala Pro Ala Pro Ala | | | |
| 625 | 630 | 635 | 640 |
| cct gct cca gcc atg gta tca gct ctg gcc cag gcc cca gcc cct gtc | | | 1968 |
| Pro Ala Pro Ala Met Val Ser Ala Leu Ala Gln Ala Pro Ala Pro Val | | | |
| 645 | 650 | 655 | |
| cca gtc cta gcc cca ggc cct cct cag gct gtg gcc cca cct gcc ccc | | | 2016 |
| Pro Val Leu Ala Pro Gly Pro Pro Gln Ala Val Ala Pro Ala Pro | | | |
| 660 | 665 | 670 | |
| aag ccc acc cag gct ggg gaa gga acg ctg tca gag gcc ctg ctg cag | | | 2064 |
| Lys Pro Thr Gln Ala Gly Glu Gly Thr Leu Ser Glu Ala Leu Leu Gln | | | |
| 675 | 680 | 685 | |
| ctg cag ttt gat gat gaa gac ctg ggg gcc ttg ctt ggc aac agc aca | | | 2112 |
| Leu Gln Phe Asp Asp Glu Asp Leu Gly Ala Leu Leu Gly Asn Ser Thr | | | |
| 690 | 695 | 700 | |
| gac cca gct gtg ttc aca gac ctg gca tcc gtc gac aac tcc gag ttt | | | 2160 |
| Asp Pro Ala Val Phe Thr Asp Leu Ala Ser Val Asp Asn Ser Glu Phe | | | |

| | | | | | | | |
|---|-----|-----|-----|-----|-----|-----|------|
| 705 | | 710 | | 715 | | 720 | |
| cag cag ctg ctg aac cag ggc ata cct gtg gcc ccc cac aca act gag | | | | | | | 2208 |
| Gln Gln Leu Leu Asn Gln Gly Ile Pro Val Ala Pro His Thr Thr Glu | | | | | | | |
| | 725 | | 730 | | 735 | | |
| ccc atg ctg atg gag tac cct gag gct ata act cgc cta gtg aca ggg | | | | | | | 2256 |
| Pro Met Leu Met Glu Tyr Pro Glu Ala Ile Thr Arg Leu Val Thr Gly | | | | | | | |
| | 740 | | 745 | | 750 | | |
| gcc cag agg ccc ccc gac cca gct cct gct cca ctg ggg gcc ccg ggg | | | | | | | 2304 |
| Ala Gln Arg Pro Pro Asp Pro Ala Pro Ala Pro Leu Gly Ala Pro Gly | | | | | | | |
| | 755 | | 760 | | 765 | | |
| ctc ccc aat ggc ctc ctt tca gga gat gaa gac ttc tcc tcc att gcg | | | | | | | 2352 |
| Leu Pro Asn Gly Leu Leu Ser Gly Asp Glu Asp Phe Ser Ser Ile Ala | | | | | | | |
| | 770 | | 775 | | 780 | | |
| gac atg gac ttc tca gcc ctg ctg agt cag atc agc tcc taa | | | | | | | 2394 |
| Asp Met Asp Phe Ser Ala Leu Leu Ser Gln Ile Ser Ser | | | | | | | |
| 785 | 790 | | 795 | | | | |

<210> 143

<211> 797

<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-NFkappaB fusion

<400> 143

| | | | | | | | | | | | | | | | | | | | |
|---|----|---|--|--|--|--|-----|--|--|--|-----|----|----|-----|--|--|--|--|--|
| Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu | | | | | | | | | | | | | | | | | | | |
| 1 | | 5 | | | | | 10 | | | | | | | 15 | | | | | |
| Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly | | | | | | | 25 | | | | | | 30 | | | | | | |
| | 20 | | | | | | | | | | | | | | | | | | |
| Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile | | | | | | | 40 | | | | | | 45 | | | | | | |
| | 35 | | | | | | | | | | | | | | | | | | |
| Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr | | | | | | | 55 | | | | | 60 | | | | | | | |
| | 50 | | | | | | | | | | | | | | | | | | |
| Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys | | | | | | | 70 | | | | 75 | | | | | | | | |
| | 65 | | | | | | | | | | | | | | | | | | |
| Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu | | | | | | | 85 | | | | 90 | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu | | | | | | | 100 | | | | 105 | | | 110 | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly | | | | | | | 115 | | | | 120 | | | 125 | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr | | | | | | | 130 | | | | 135 | | | 140 | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn | | | | | | | 145 | | | | 150 | | | 155 | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser | | | | | | | 165 | | | | 170 | | | 175 | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly | | | | | | | 180 | | | | 185 | | | 190 | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu | | | | | | | 195 | | | | 200 | | | 205 | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe | | | | | | | 210 | | | | 215 | | | 220 | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser | | | | | | | 225 | | | | 230 | | | 235 | | | | | |
| | | | | | | | | | | | | | | | | | | | |

Gly Leu Arg Ser Arg Ala Met Asp Glu Leu Phe Pro Leu Ile Phe Pro
 245 250 255
 Ala Glu Pro Ala Gln Ala Ser Gly Pro Tyr Val Glu Ile Ile Glu Gln
 260 265 270
 Pro Lys Gln Arg Gly Met Arg Phe Arg Tyr Lys Cys Glu Gly Arg Ser
 275 280 285
 Ala Gly Ser Ile Pro Gly Glu Arg Ser Thr Asp Thr Thr Lys Thr His
 290 295 300
 Pro Thr Ile Lys Ile Asn Gly Tyr Thr Gly Pro Gly Thr Val Arg Ile
 305 310 315 320
 Ser Leu Val Thr Lys Asp Pro Pro His Arg Pro His Pro His Glu Leu
 325 330 335
 Val Gly Lys Asp Cys Arg Asp Gly Phe Tyr Glu Ala Glu Leu Cys Pro
 340 345 350
 Asp Arg Cys Ile His Ser Phe Gln Asn Leu Gly Ile Gln Cys Val Lys
 355 360 365
 Lys Arg Asp Leu Glu Gln Ala Ile Ser Gln Arg Ile Gln Thr Asn Asn
 370 375 380
 Asn Pro Phe Gln Val Pro Ile Glu Glu Gln Arg Gly Asp Tyr Asp Leu
 385 390 395 400
 Asn Ala Val Arg Leu Cys Phe Gln Val Thr Val Arg Asp Pro Ser Gly
 405 410 415
 Arg Pro Leu Arg Leu Pro Pro Val Leu Pro His Pro Ile Phe Asp Asn
 420 425 430
 Arg Ala Pro Asn Thr Ala Glu Leu Lys Ile Cys Arg Val Asn Arg Asn
 435 440 445
 Ser Gly Ser Cys Leu Gly Gly Asp Glu Ile Phe Leu Leu Cys Asp Lys
 450 455 460
 Val Gln Lys Glu Asp Ile Glu Val Tyr Phe Thr Gly Pro Gly Trp Glu
 465 470 475 480
 Ala Arg Gly Ser Phe Ser Gln Ala Asp Val His Arg Gln Val Ala Ile
 485 490 495
 Val Phe Arg Thr Pro Pro Tyr Ala Asp Pro Ser Leu Gln Ala Pro Val
 500 505 510
 Arg Val Ser Met Gln Leu Arg Arg Pro Ser Asp Arg Glu Leu Ser Glu
 515 520 525
 Pro Met Glu Phe Gln Tyr Leu Pro Asp Thr Asp Asp Arg His Arg Ile
 530 535 540
 Glu Glu Lys Arg Lys Arg Thr Tyr Glu Thr Phe Lys Ser Ile Met Lys
 545 550 555 560
 Lys Ser Pro Phe Ser Gly Pro Thr Asp Pro Arg Pro Pro Pro Arg Arg
 565 570 575
 Ile Ala Val Pro Ser Arg Ser Ser Ala Ser Val Pro Lys Pro Ala Pro
 580 585 590
 Gln Pro Tyr Pro Phe Thr Ser Ser Leu Ser Thr Ile Asn Tyr Asp Glu
 595 600 605
 Phe Pro Thr Met Val Phe Pro Ser Gly Gln Ile Ser Gln Ala Ser Ala
 610 615 620
 Leu Ala Pro Ala Pro Pro Gln Val Leu Pro Gln Ala Pro Ala Pro Ala
 625 630 635 640
 Pro Ala Pro Ala Met Val Ser Ala Leu Ala Gln Ala Pro Ala Pro Val
 645 650 655
 Pro Val Leu Ala Pro Gly Pro Pro Gln Ala Val Ala Pro Pro Ala Pro
 660 665 670
 Lys Pro Thr Gln Ala Gly Glu Gly Thr Leu Ser Glu Ala Leu Leu Gln
 675 680 685
 Leu Gln Phe Asp Asp Glu Asp Leu Gly Ala Leu Leu Gly Asn Ser Thr
 690 695 700
 Asp Pro Ala Val Phe Thr Asp Leu Ala Ser Val Asp Asn Ser Glu Phe
 705 710 715 720
 Gln Gln Leu Leu Asn Gln Gly Ile Pro Val Ala Pro His Thr Thr Glu
 725 730 735
 Pro Met Leu Met Glu Tyr Pro Glu Ala Ile Thr Arg Leu Val Thr Gly

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | | | 740 | | | | | 745 | | | | | 750 | | | |
| Ala | Gln | Arg | Pro | Pro | Asp | Pro | Ala | Pro | Ala | Pro | Leu | Gly | Ala | Pro | Gly | |
| | | 755 | | | | | 760 | | | | | 765 | | | | |
| Leu | Pro | Asn | Gly | Leu | Leu | Ser | Gly | Asp | Glu | Asp | Phe | Ser | Ser | Ile | Ala | |
| | 770 | | | | | 775 | | | | | 780 | | | | | |
| Asp | Met | Asp | Phe | Ser | Ala | Leu | Leu | Ser | Gln | Ile | Ser | Ser | | | | |
| 785 | | | | | 790 | | | | | 795 | | | | | | |